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The Educational Record

April 1957

Check That Statistic!

T. M. STINNETT

WAS IT Josh Billings who said: "'Twasn't my ignorance that done me in; 'twas the things I knowed that wasn't so"?

This quip seems peculiarly applicable to the current ferment over alleged weaknesses in education and the popular pastime of manipulating data in support of individual conclusions. Everybody is getting into the act; and a statistic may be found, and is being found, to support a variety of viewpoints. It might be said that we are rapidly developing a body of folklore about education.

While this article will deal with the careless manner in which educational statistics often have been kicked around, there are complaints from other fields. For example, Herblock, the *Washington Post and Times Herald* famed cartoonist, in his latest book *Here and Now* devotes a chapter (cartoons and text) to "Tell Me Not in Mournful Numbers." He takes dead aim at the manipulation of figures by government officials. Some case examples which he describes: The Hoover Commission reported that the Navy had stocked enough canned hamburger to last 60 years. Herblock says the present Navy strength of 886,000 men could consume this stockpile in two meals. Another statistic, glibly repeated by one official after another during the early days of the Eisenhower administration, asserted that since inauguration day government employees were getting to work 27 minutes earlier in the morning. An enterprising reporter checked with the highway departments of the District of Columbia, Virginia, and Maryland, which reported no perceptible change in the flow of traffic. The officials who had made the statement, when asked for their authority, simply quoted the previous person who had made it. And there was the famous numbers game of a senator in 1950: "I hold in my hand a list of 205" (*or* 81 *or* 57) "people employed by the State Department who are Communists." Nobody has ever found out which number, if any, was correct. This writer does not vouch for the accuracy of the statistics cited above. They are mentioned merely to illustrate a problem which is becoming increasingly important to those of us in education.

How carefully did you check that statistic you used in your last speech? Did you pick it up from a speech you heard or read, or from a magazine article, and then repeat it as the gospel truth? Did you go back to the source

and get it straight, in unadulterated form? More important, did you accept it at face value or did you dig into all of its ramifications and limitations and get a perspective of its real meaning?

The personal pronoun used in the preceding paragraph might well be changed to the first person singular, not out of modesty as much as out of a sense of guilt. Indeed, the knowledge of incautious and sometimes injudicious use of data has impelled this writer to believe that the hazards of such practices ought to be emphasized.

This is no laughing matter. There are recent examples of widely quoted, generally accepted statistics on educational problems which have been used to support a conclusion proven, upon closer scrutiny, to be unwarranted. There is reason to believe that many of these loosely used statistics are causing great harm.

Perhaps the matter was not so serious in the days when educators lived in a world largely inhabited by themselves. They could mumble their statistics and nobody's mind was confused, except possibly another educator's. Moreover, educators for the most part have learned to be wary of categorical interpretations of data. But we are now rapidly moving well into a period in which the public is taking an increasingly active role in the study and determination of educational affairs. And the average layman reads as he runs, especially in matters outside his own field of vocational interest. He tends, quite naturally, to dote on the showy, shocking statistic.

Thus one false statistic, or one statistic isolated from other relevant data, or one misinterpreted statistic can cause irreparable damage by creating distorted images in the public mind. How many millions of dollars have been extracted from an unwitting public by "scare statistics" designed to stampede people into correcting some presumed weakness in our schools is, of course, unknown. But it is an interesting speculation.

Let us examine some recent examples of statistics which seem to have been loosely used and consider the devilment they may cause.

Take as Exhibit A the statement that fewer than half of our public high schools are offering physics and chemistry. The immediate inference of the public from such a statement is that more than half of our high schools have grown insensitive to the needs of our technological society and are not concerned with providing instruction in these two basic sciences. Another immediate image that arises in the public's mind as a result of the statement is that half or more than half of our high school students do not have the opportunity, even if they wanted to do so, to pursue courses in physics and chemistry. Here is the wording of the statement:

> If this were not sad enough, more than half (53 per cent) of our high schools do not teach physics at all. In half our schools students simply have no access to this subject which is so important to an understanding of the technological world in which they will spend their lives. Half of our high schools do not teach chemistry either.
>
> Two generations ago, in 1890, one in every five high school students studied physics. Today it is only one out of every 22. More than half of all students back in those days studied algebra; now it is less than one-fourth. The study of chemistry has fallen off 30 per cent. These are the statistics of the United States in the era of technology.[1]

This statement was made in a public address by a high governmental official,

[1] Lewis L. Strauss, "Freedom's Need for the Trained Man," in *The Growing Shortage of Scientists and Engineers:* Proceedings of the Sixth Thomas Alva Edison Foundation Institute, November 21–22, 1955 (New York: New York University Press, 1956), p. 19.

none less than the chairman of the United States Atomic Energy Commission, whose connection with nuclear research was of such a sensitive nature that it inevitably caused great concern on the part of the public regarding the adequacy of our high schools and their offerings, both in terms of our expanding technological needs and in terms of our security requirements. In addition, this statement had all the ingredients calculated to set editorial writers, slick magazine editors, and radio and television commentators drooling.

Was this statement true? If not, how did the speaker arrive at such interpretations or misinterpretations?

The statement about the number of high schools offering physics and chemistry, to the best of our knowledge, was not true; and the figures quoted on enrollments are seriously misleading. Yet the misinterpretation arose in quite a normal way. There is no doubt that the statement was sincere, and the full text reflects an honest intent to help improve the situation alleged to exist in our high schools. One cannot be precisely sure of it, since no source of information for this statement was cited by the speaker, but the evidence seems to point to the probability that Mr. Strauss, or his speech writer, came across a study, published by the United States Office of Education in 1950, of the offerings of American high schools for the first term of the school year 1947–48.[3] In a table[3] there is the assertion that only 47.8 percent of the high schools sampled offered physics and 49.4 percent offered chemistry. There it was in black type, apparently a definitive and unequivocal statement. This was bound to mean that about 53 percent of our high schools did not offer physics and about 50 percent did not offer chemistry. But did it mean this?

Was this the exact meaning of the table? Not at all; this is a good example of "things are not what they seem," especially statistics. Let us examine the text which accompanied the table. The text says:

> More schools offer the regular science courses and more pupils enroll in them than was reported by the schools for this study. This is due to the fact that some schools make a practice of alternating science courses in successive years. Alternating courses commonly involves ninth-grade general science and biology, and chemistry and physics. *Data concerning the extent to which alternating of science courses is practiced in public high schools were not obtained in this study.*[4]

The random sample of high schools contained in this study numbered 715 out of about 24,000 high schools in operation in 1947–48, or 3.09 percent of the total number of high schools. Thus, it is clear from the author's explanation that the figures included in the table did not include those high schools which alternate the two sciences —physics and chemistry—in the sense that those schools offering chemistry in the fall term of 1947–48 would report no offering in physics and those offering physics would report no offering in chemistry.

While the precise figure on the number of high schools which alternate the sciences may not be known, since that is a practical and common procedure in small high schools, some idea of the extent of erroneous interpretation of the data in the table referred to above is indicated by the fact that about two-thirds of the 24,000 high schools in 1947–48 had enrollments of 300 or less.

It is well known that small high

[3] Phillips G. Johnson, *The Teaching of Science in Public High Schools, Inquiry into Offerings, Enrollments, and Selected Teaching Conditions*, 1947–48 (Washington: Government Printing Office, 1950).

[3] *Ibid*, Table 4, p. 5.

[4] *Ibid*, p. 4.

schools, because of limited enrollment and teaching staff, alternate certain subjects. For example, in the field of science they will offer general science one year and biology the next so that all high school students in the first two years will be able to study both subjects, but only one in any given year. They also alternate physics and chemistry in the junior and senior years in the same manner.

At the time this statement was made, many educators were concerned about the distorted picture it presented and made efforts to have it corrected. But, like most statements that attract popular interest, overtaking it was impossible. Thousands of editorials, news stories, and speeches have picked up this statement and drummed it into the minds of the American people. And the erroneous and misleading parts of the statement continue to march across the printed pages, into speeches, and into the scripts of commentators, despite the fact that a new study by the Office of Education shows how far afield this statement was. The Office of Education released in June 1956 a sampling study by Kenneth Brown [5] which found that only 23 percent of our high schools did not offer physics or chemistry, and these were predominantly small high schools which enrolled only about 6 percent of our high school students. Moreover, Brown's study found that instead of the alleged one in twenty-two high school students taking physics, that about one in five were pursuing the subject, and "the number of pupils in chemistry has not declined 30 per cent during the past 60 years—it has increased more than twentyfold. Two-thirds of the high school pupils take algebra, instead of one-fourth." [6]

The differing reports on science enrollments point up another statistical booby trap which Brown's study describes. His calculations, as he is careful to explain, are based upon the percentages of the appropriate grade enrollments which are pursuing a given subject, while the study from which Mr. Strauss apparently took his data was based upon the percentages of the total high school enrollments. For example, one may say that only 25 percent of all high school students in a given year are taking algebra and this might be accurate. At the same time, it could be said that 66 percent of all ninth-grade students are enrolled in algebra in the same year. Both statements might be accurate, but which of the two provides the correct interpretation?

Or, consider the case of the Educational Testing Service report to the Carnegie Corporation which had financed a study by ETS of the teaching of mathematics in elementary and secondary schools.[7] ETS came up with the report which said, "Although all states require education courses, one-third of the states will certificate high school teachers of mathematics without any college preparation in math." This was a case of a statistic not meaning what it seemed to.

Apparently ETS somewhere found the statement that one-third of the states issue general or blanket high school certificates for teaching in the academic fields and came to the conclusion that this meant that there were no requirements in those states for teaching mathematics. The fact is that 18 states do issue such a certificate, or did at the time the ETS study was made (the number is now 17), but all have prescriptions either in certification requirements or in accrediting requirements, which the em-

[5] Kenneth E. Brown, *Offerings and Enrollments in Science and Mathematics in Public High Schools*, U. S. Department of Health, Education, and Welfare, Office of Education, Bulletin No. 118 (Washington: Government Printing Office, 1956).

[6] *Ibid*, p. 2.

[7] *Mathematics Education* (Princeton, N.J.: Educational Testing Service, 1956).

ploying school official is expected to enforce on teachers he employs, to teach math in the high schools. In other words, not a single state is without requirements of college preparation in math for high school math teachers. Again, this statement was picked up and widely circulated by the slick magazines, by newspapers, and repeated by public speakers, calling attention to the horrible situation in which our educational authorities are unconcerned about whether teachers of mathematics know any math or not.[8]

To judge this statement fairly, it should be said that no comprehensive, conclusive data are available on the number or proportion of teachers with teaching assignments outside their fields of competence. It would seem logical to assume—because of the long-sustained and critical shortage of teachers, if for no other reason—that there are thousands of such teachers. But this is quite a different matter from viewing the situation as one of neglect or indifference by the state certificating agencies.

Now, let us take one of those glamorous catchall statements that again causes the educational writers, editors, and speakers to jump apprehensively through verbal hoops. The statement asserts "that to supply our need for elementary and secondary school teachers in the next decade will require one-half or more of all of our college graduates. And of course this is impossible." To our best knowledge, this statement was first made by an official of one of the wealthy foundations. It was published in the Fund for the Advancement of Education's excellent booklet *Teachers for Tomorrow* and, based on the assumptions set forth in the text, a good case is made for its soundness. This statement has been widely publicized and has been repeated in thousands of speeches. It goes on and on like the poetic brook. At first this statistic seems unassailable. But is it? Let us examine it for a moment.

Currently the schools are consuming anywhere from 150,000 to 175,000, maybe more, new teachers each year, whereas college graduating classes were down to 285,000 in 1955 and to an estimated 325,000 in 1956. These data alone would support the statement. But let's dig in a little. If it could be assumed that all teachers who take jobs each fall must come from the previous college graduating class, the statement would be conservative. Actually, however, thousands of college graduates from former years who had prepared for teaching but who went on to graduate schools, or went into the armed services, or into industry, or even into marriage return each fall to teaching. In what numbers these people enter teaching each year is not known. We do know that some states are recruiting as high as one-half of their new teachers each fall from these sources. Moreover, if all states now required, or should require in the near future, college graduation as a prerequisite to certification and teaching, the statement would be more nearly valid. The fact is, or was at the time the statement was made, that some twenty-one states and territories still are certificating beginning elementary teachers below the degree level. But, of course, these teachers cannot be counted in the estimate as having to come from the college graduating class.

This is an easy, catchy statement which promptly brings editorial writers and other news outlets to a posture of attention. It may be argued that it is a useful statement in that it serves to point up an admittedly acute situation. But it is easy to overdo statements designed to arouse the public. One of the probable results of the statement is to impel some

[8] For a detailed repudiation of this statement gone astray, see "Math and Science Again" (Editorial Comments), *Journal of Teacher Education*, September 1956, pp. 194, 267–73.

school boards and some segments of the public to accept the thesis that the teaching load must be increased radically, with compensations in the form of untrained teacher aides and mechanical assistance, thus cutting down the number of qualified teachers needed and the number of classrooms which have to be built. And fuel was added to this fire by an additional statement from the same source that, "We already have enough teachers, if they were properly used."

In connection with the above statement, let us consider a by-product, a statistic gone astray. A magazine article painted in glowing terms the miraculous benefits of the Bay City, Michigan, experiment in using teacher aides. Carefully documented timetables showing how teachers spent their time before and after aides were used were included. These tables were presented to illustrate how teachers were relieved of "nonprofessional" duties and were able to give more individual instruction to children. The article delivered the extraordinary statistic that teachers, after teacher aides were employed, spent 80 percent more time in personal counseling for students.[9] This was phenomenal; it was staggering in its implications, until someone dug down into the data and found that the increased time amounted to four minutes per day.[10]

Let us turn now to another statistic, one for which my commission[11] is responsible because it was released in one of its publications. Moreover, this writer must plead guilty to using this without adequate qualification. It is to be found in the report of the 1955 teacher supply and demand study.[12] This statistic was that only 128 high school physics teachers were prepared in that year, the implication being that this was the total supply to fill all the teaching jobs in that field in the ensuing year, including new positions resulting from increased enrollments and to replace those who quit each year. Again this statistic has been quoted and requoted, printed and reprinted, kicked around in such a way as to lead many people to believe that teaching physics in the high schools is practically extinct. When one examines critically the precise meaning of this bare statistic, however, he finds a lot of qualifications and extenuating circumstances. First, only those persons whose major field of concentration is physics and who at the same time took professional preparation for teaching are included in the 128 figure. All those who have completed a second major or a minor in physics or completed sufficient semester hours to be certificated to teach physics in their respective states are not included. Also not included in the 128 are those who completed a comprehensive major in the field of science and who are therefore eligible for certification to teach all the science subjects in high schools—this is a typical pattern in most states. A subsequent report,[13] made when the total of new physics teachers reported had grown to 189, sought to be more definitive about the total supply of physics teachers and other science fields by stating:

> Students graduating with preparation in the comprehensive field of science are listed in "General Science" (1788 in 1955 and

[9] Arthur D. Morse, "Bay City Beats the Teaching Shortage," *Colliers*, November 11, 1955, pp. 37–41.

[10] From an unpublished committee report of the Michigan State Department of Public Instruction, as quoted in *Journal of Teacher Education*, June 1956, p. 148.

[11] National Commission on Teacher Education and Professional Standards, National Education Association.

[12] National Education Association, Research Division, "The 1955 Teacher Supply and Demand Report," *Journal of Teacher Education*, March 1955, pp. 23–71.

[13] National Education Association, Research Division, "The 1956 Teacher Supply and Demand Report," *Journal of Teacher Education*, March 1956, p. 39.

2121 in 1956). Doubtless many of these graduates have completed full majors in biology or chemistry or physics, but each is counted only once. Thus, a physics major who also has the required preparation in both biology and chemistry to teach general science is listed in the latter field only.

Doubtless this explanatory statement should have been included in the earlier annual reports on teacher supply; to have done so would perhaps have been to forestall misinterpretation of the data. Moreover, the teachers prepared in many fields, through special programs for college graduates of earlier years, are not reported in the annual national study.

Nobody knows precisely how many people qualified to meet the certification requirements to teach physics in our high schools complete preparation each year. The same would be true of chemistry or of biology. But the figure of 128 is still being used to scare children at night as well as to leave the great American public gnawing at its fingernails over the threat of losing our superiority in atomic and technological weapons to Russia, and over the threat to our industrial progress.

Let us jump now momentarily to the field of teacher certification. One instance of misinterpretation of data regarding this phase of education has been cited. My friends in the academic departments of colleges and universities persistently confront me with the fact that about half of our states do not specify completion of any prescribed number of hours in general education as a prerequisite to certification. Immediately, the conclusion is drawn that the certification authorities in these states are not concerned with having broadly educated teachers, that they are concerned only with persons who have had the specified number of hours in professional education. The facts are that certification authorities have long since discovered that this matter can best be left to the institutions and that no teacher education institution worthy of the name will graduate a teacher without a solid, basic core of general education. This is another case of a statistic that does not mean what it appears to.

Or, consider the case of a distinguished layman who has become excited about the inability of liberal arts graduates of his university to secure state certificates to teach in the high schools of his state. He has concluded, after finding out that high school teachers in his home state must present a prescribed number of hours in education, that graduates of his university would be compelled to go to the state teachers colleges and spend a year or two working on "dull, duplicated, watered-down education courses." The facts are that a graduate of his university can obtain in his own university the hours required for full certification. Moreover, this graduate could probably begin teaching immediately in that state on an emergency certificate and would be permitted to work off the hours in his own university during the summer.

To be evenhanded in this matter of using and interpreting statistics—to illustrate that it is not a matter of deliberate or willful misuse, but rather a matter of checking original sources and careful interpretation—another statistic which has led to some erroneous conclusions may be cited from the commission's annual teacher supply and demand study. Since 1954 this annual study has reported a shocking proportion of those completing requirements for teaching each year who do not in fact take teaching jobs in the fall following their graduation.

In the 1956 study, for example, data from 26 states, covering 77 percent of the eligible elementary school teachers and 72.3 percent of the eligible high school teachers in the class of 1955, reflected that only about 80 percent of the elementary school teachers and about 63 percent of the high school teachers, and

71 percent of all teachers completing preparation in 1955 actually took teaching jobs in the fall of 1956. On the face of it, this is generally interpreted to mean that fully one-fifth of those who have prepared for elementary teaching and nearly two-fifths of those who have prepared for high school teaching do not become teachers, that they turn thumbs down on teaching as a career, go into some other occupation, wasting, in some measure, years of college study.

Is this conclusion justified? No. All one can be certain about is that, beyond question, those proportions did not accept teaching jobs in the fall following their graduation. An analysis of what they did the year following their graduation will give some indication of the fallacy of assuming that they are irrevocably lost to teaching. Fully one-third of those who did not take teaching jobs went into military service or graduate schools. Only one-sixth of this group were known to have taken jobs in non-teaching fields. There are no data on the numbers of these deflectors in a given year who do enter teaching in subsequent years. It may reasonably be assumed to be rather large, perhaps equaling the deflectors in the current year. But the usual interpretation is that the deflectors, about one-third of the total supply each year, are forever lost to teaching. Obviously this is another statistic requiring fuller analysis.

The above lists only a few of the recent, more glaring misinterpretations of statistics which have been carefully, scientifically derived and, almost without exception, carefully interpreted by their creators. After all, when a researcher painstakingly sets forth the assumptions on which data are derived and interpreted, even though the conclusions and interpretations differ widely from those of another researcher using different assumptions, each may be valid.

The danger arises from the loose use of statistics without stating the assumptions or the qualifications which are indicated.

And now for a solid clincher to the case this paper attempts to make. After this manuscript was in the hands of the editor, the writer's attention was called to a passage which unwittingly misrepresented the statistics in a statement which was being severely criticized for this very sin. The passage was reworded correctly—we hope.

Check that statistic!

The National Science Foundation's Programs in Education in the Sciences

HARRY C. KELLY

The ability of the United States to succeed in its expanding responsibilities in world affairs, to maintain its technological leadership, to preserve our freedom, and to expand the welfare of our people depends in large measure on the quality of the education we make available to our youth. To meet the growing and complex problems facing us, this education must encompass the liberal arts. Needed, too, are highly trained specialists in all fields to cope with the growing complexities of a changing world. Because of our growing dependence on technology—due, at least in part, to growing world populations, decreasing natural resources, and economic and military competition—highly trained, creative scientists and engineers, and well-trained technicians are especially needed. In addition, because of the necessity for adaptability to this new technical age, all of us should receive some training in the rudiments of science as part of our general education.

The problem

The basic problem which the United States faces in maintaining its position of world technological leadership is that of ensuring a high quality of instruction during the approaching difficult period of vastly increased enrollments.

The problem is illustrated by the magnitude and growth of the number of scientists and engineers in the United States. Between 1930 and the present, the number of scientists in this country increased fivefold and the number of engineers tripled, while our population increased 35 percent. Present estimates indicate that the need for scientists and engineers will continue to increase at an accelerated rate.

There are approximately 700,000 engineers and 250,000 scientists in our country. They actually represent a small proportion of the total population—only slightly more than one-half of 1 percent. The technological leadership which the United States has achieved depends primarily on the high quality of this small group and upon our industrial organization. As the group becomes larger, the highest quality must be maintained, for creative scientists and engineers hold the keys to scientific advances of the future.

New demands for scientists from 1950 on have met the "thin generation"—the small age groups born in the 1930's. With the pressures of the cold war and the needs of technological expansion, demands have increased and the scarcity of young scientists has become quite severe in a number of areas of specialization.

After the "GI bulge" passed through our colleges, there was a brief decline in enrollments; in 1952, however, enrollments again began to climb, and at present our college population is larger than ever. Moreover, all indications are that college and university enrollments will rise even more rapidly in the near future. The increase since 1952 has resulted primarily from the greater proportion of young people attending college. In the 1960's the sharp rise in numbers, likely to double present enrollments, will result to a large

extent from the increase in the size of the groups reaching college age.

The problem of providing an adequate supply of scientists and engineers, therefore, must be broken into two parts: First, we must satisfy the immediate problem of the demands of industry, government, and the teaching profession today; and second, we must prepare adequately for the much larger numbers of students who will be entering our high schools and colleges soon.

The short-range problem is mainly one of numbers, involving as it does individuals qualified for research, teaching, engineering, and production. It can be alleviated only through such devices as better utilization of already trained personnel, new incentives to bring trained personnel back into fields of science and engineering, special training of essential specialists in acutely short supply, and the development and use of a body of trained technicians to make the work of the scientist and engineer more effective.

The long-range problem is more difficult, since it must involve heavy emphasis on quality as well as quantity. More than money is needed to solve the problem, for quality in a scientist or engineer means that he has the ability to think critically and effectively, to understand the basic principles of science, and to apply these principles creatively.

A basic way in which to improve both quality and quantity is to expand and improve the corps of science and mathematics teachers in high schools, colleges, and universities. Identification of aptitude, enlistment of able young people, and—most important of all—quality of the training depend upon the abilities of teachers. If we are to maintain and improve the quality of instruction, we must begin right now to ensure the availability of highly trained, enthusiastic, and well-paid high school and college teachers, and of adequate physical facilities.

While we cannot measure accurately the long-range needs for scientists and engineers, much less the needs in specific areas of specialization, we do know that such needs will develop. We must continually watch the situation to make sure that the oncoming supply of scientists and engineers keeps reasonable pace with increasing demand. If at any time it appears that demand will seriously outrun supply in particular specialties, consideration will have to be given to additional and perhaps more radical measures.

Evidence available today indicates that science and engineering are now attracting a gradually increasing proportion of our talented young people. Recent publicity emphasizing the needs of industry and government for more scientists and engineers, and the many special programs of various groups launched for the purpose of motivating more young people into science and engineering, appear to be reaching an increasing proportion of our most talented youth. This fact imposes an even greater obligation to provide excellence in education for these able students.

Thus, the problem of numbers, attacked with vigor and imagination, should change character by the middle of the next decade. The continuing problem will be to make certain that the education available to young men and women who choose careers in science is geared to their needs and talents as individuals as well as to the nation's increasing dependence on science and technology.

The health of our own society and our ability and capacity to assume increasing responsibilities as a world power depend heavily upon the quality of scientific education throughout the country.

With the special need for scientists and engineers and the increasing attention being given to the problem, it is well to review the National Science Foundation's principles and activities in support of education in the sciences.

Principles of action

In attacking the problem outlined above, the Foundation has recognized several principles which form the basis for all its actions. These must be continually reviewed.

1. Any attack on the problem of education in the sciences must be made with mutual and sympathetic cooperation between scientists and the teachers in the educational community. Without this cooperation, any program in education will fail to achieve its primary objectives. Responsibility for this cooperation rests with the scientists and educators, and in making a grant to a college or university the Foundation assumes that the institution accepts this responsibility.

2. We recognize that the identification of talent and the motivation of our youth are most effective when they arise from sources as close to our youth as possible. Traditionally and soundly, it is the responsibility of the family, the community, and the local school system to provide the influences which shape and develop the interests of youth. In the best interest of the national welfare, the Federal Government may sometimes need to provide support to these local efforts through financial assistance.

3. One of the best methods for motivating young people into particular fields is to let them see the intellectual challenges and career opportunities which lie within them. A significant percentage of Foundation funds, therefore, should be invested in giving young people an opportunity to learn the basic principles of science and to gain some understanding of their applications. Emphasis on the subject matter of science not only helps in the self-identification of some talented youth, but it also helps all youngsters better to understand and adapt to the technical age.

4. In developing special programs to meet the acute shortage areas in technological training, we must bear in mind their possible effects on the long-term best interests of our country and our people. The need for fundamental research and trained researchers exists in all fields of science and technology, and it is impossible to predict which particular research idea will have the most profound effect on a later technical age. Basic research requires time and resources for quiet reflection and free experimentation. Federal or any other central direction or control could lead to a kind of Maginot Line in science education which would, in turn, extend to technology.

5. We appreciate that the effort to ensure excellence in education in the sciences will be a big and expensive undertaking, and that the Foundation should in every way encourage nonfederal groups to provide funds for its support. While the Federal Government is responsible for ensuring the defense and welfare of the nation, the use of its funds should be flexible and adaptable —adaptable to the willingness of nonfederal groups (public and private) to give support.

6. The National Science Foundation should employ its funds in such a way that colleges and universities will be encouraged and better able to fulfill their responsibilities in helping both students and teachers to increase their knowledge and understanding of science.

Programs in education in the sciences of the National Science Foundation

The following review of Foundation programs in education in the sciences and the accompanying discussion of

some problems involved in them are based on the above principles and on the belief that the problem is to maintain and improve the quality of education in the sciences during a period of rapid expansion in student enrollment.

Fellowships

The National Science Foundation currently administers programs of predoctoral, postdoctoral, senior postdoctoral, and science faculty fellowships. These programs stem from the conviction that it is in the best interest of the national welfare to give direct support to the more talented among our scientists at all levels to enable them to improve their competence as investigators and as teachers. The issues involved in federal support of this nature are several.

1. The magnitude of the program.—Several considerations in this problem necessarily involve human judgments. One is that the program should be of such magnitude as to encourage rather than discourage nonfederal groups, particularly industrial, to lend support. It should be of such size that a reasonable percentage of our able youth who have demonstrated competence will be given support to continue their scientific studies.

During this period of recognized need for more highly qualified scientists and engineers, the Foundation has been asked why it did not sharply increase the magnitude of its fellowship program. However, during this time of rapidly expanding college enrollments following a period of declining college graduations, colleges and universities have greater need for teaching and laboratory assistants. To take too high a percentage of graduate students into our fellowship program would make the teaching problem in our colleges more difficult. As college graduations increase, we should consider a corresponding increase in our fellowship program.

At present the Foundation's fellowship program supports about 2 percent of all graduate students in science.

2. Relative needs in different disciplines.—Another problem we face is that of relative needs in the different disciplines of science and engineering. Looking at the present labor market it is clear that there is a special need at this moment for young people in electronics, nuclear engineering, aeronautical engineering, mathematical engineering (to program computers), and other fields. Should our fellowship program be designed to give weight to these special current needs?

Because of the difficulty of predicting future needs, because of the danger of overplanning, and because motivation of youth in particular fields should not be the responsibility of the Federal Government, we have determined that the proportional number of fellowships in each discipline of science should be determined by the numbers, interests, and capabilities of the young people who apply to us for support. That is, the proportion of our fellowships in a particular field of science is determined by the proportional number of qualified applicants in that particular field. Direction and emphasis given to particular fields of science will depend on the ability, training, and ambitions of youth and by the demands of industry and educational institutions.

3. Geographic distribution.—The National Science Foundation Act states that recipients of fellowships may attend ". . . accredited nonprofit American or nonprofit foreign institutions of higher education, selected by the recipient of such aid. . . ." This freedom of choice has resulted in an uneven distribution, with some concentration of fellows in certain schools. This problem of distribution is the most difficult one encountered in the program.

The primary aim of the fellowship

program is to give assistance to a limited number of highly qualified graduate students to continue their education. Graduate schools do need assistance in building up their competence, but this problem can be attacked by other methods, such as research grants and programs in education in the sciences which are described later. The values of freedom of choice of institutions and freedom of choice of research projects are too great to be given up easily. Considerations to date on this difficult problem of distribution lead us not to request a change in the Foundation Act on this question.

The institutes program

We recognize that the teacher is a key to the quality of the education of youth, and if we are to support excellence in training we must seek methods to assist teachers. Financial limitations brought about by the depression caused teaching loads to increase greatly. Teachers found less and less time for intellectual refreshment and for keeping up to date in their fields. In addition, during the last war and down to the present time an increasing amount of federal and industry-sponsored developmental work has been undertaken by colleges and universities, making further inroads on the time of teachers. The difficulties of teachers in finding leisure time for intellectual pursuits of their own choosing and quiet, scholarly conversations with their students have thus been compounded. The problem, then, is to devise methods to give teachers time for intellectual refreshment, opportunities to keep abreast of new developments in their subject-matter fields, sufficiently high stipends to compete with other opportunities to augment their incomes to meet high family expenses, and tools for necessary laboratory instruction.

Summer institutes.—As a start on this problem, the Foundation experimented with a limited number of summer institutes. As a result of this experiment, the Foundation will support during the summer of 1957 ninety-five of these institutes for high school and college teachers of science, engineering, and mathematics. The institutes are designed for the following purposes:

1. To encourage colleges and universities to develop further their interest in the subject-matter education of teachers;

2. To encourage mutual cooperation between departments of education and of science within the colleges and universities;

3. To give teachers an opportunity for intellectual refreshment during their free summer periods;

4. To develop mutual understanding between college and high school teachers of science and mathematics; and

5. To give teachers a stipend of such magnitude that it will overcome at least partially the need for them to supplement their income from summer occupations not related to their profession.

The limited number of summer institutes we have supported in the past gave promise of meeting these objectives. Increased congressional interest in the program has resulted in expansion this year. We are confident that it will be successful in this increased order of magnitude, for we are sure that our colleges and universities will utilize effectively this opportunity to make an accelerated attack on the problem of strengthening the quality of instruction in the sciences.

Academic-year institutes.—At one time, the Foundation considered the possibility of supporting a fellowship program for high school teachers of science. Since such a program would have to be limited to the support of subject matter in science and mathematics, the question arose as to whether

there were sufficient numbers of colleges and universities offering programs of instruction in science specially developed for high school teachers. There seemed not to be—unlike the situation relative to our graduate fellowship program in the sciences which is sustained by an adequate number of graduate schools of high quality. Rather than to support fellowships for high school teachers we decided, therefore, that a wiser first step might be to encourage colleges and universities to develop a new type of special subject-matter program designed to meet the specific and unique requirements of our present high school teachers of science and mathematics.

Two grants were made for academic-year institutes for the 1956–57 school year—to the University of Wisconsin and Oklahoma Agricultural and Mechanical College—as an experiment to determine the feasibility of encouraging colleges and universities to set up special programs of this kind. As a result of the success of these two institutes, the Foundation has expanded the experiment to include sixteen colleges and universities throughout the United States beginning in September 1957.

Support of this kind to our colleges and universities raises many unique and difficult questions. Some involve not only administrative problems but difficulties as well in determining the subject-matter content and method of giving academic credit. Following the principles discussed above, we believe these problems to be the responsibility of the colleges and universities and not of the Federal Government.

Other experimental programs

In its search for methods of giving support to education in the sciences the Foundation is also supporting other experimental programs.

One of these is a program of *visiting scientists*. Some colleges are remote from large research centers, and heavy teaching loads make it difficult for the faculty to keep abreast of recent developments in science. Students, therefore, do not always have an opportunity to know what the intellectual challenges are in the various research fields. For this reason, the Foundation gives a limited amount of support to several professional societies so that eminent scientists may visit a number of colleges for about a week each to give both professors and students an opportunity for intimate discussions and thus to provide them with a better understanding of current problems, challenges, and career opportunities.

Another experiment is *traveling libraries*. Books have always served well the purpose of stimulating young people, helping them to identify their own talents and to increase their subject-matter knowledge. Because some smaller high schools are remote from good library centers, the Foundation supports a limited program of traveling science libraries, administered by the American Association for the Advancement of Science, to give some high school students an opportunity to supplement local reading resources.

In a rapidly expanding school system requiring vast outlays of expenditures, expensive courses such as science and technology may suffer, because of costly maintenance requirements for special laboratory rooms and apparatus. Furthermore, technical strength in the past has been in good measure dependent upon the ability of our young people to use the tools of science. Recognizing this and the need to develop laboratory facilities for youth, we support an experimental program of *traveling demonstration laboratories* administered by the Oak Ridge Institute of Nuclear Studies. This project is designed to be carried out in the more remote high schools to

give both teachers and students an opportunity to see demonstrations of certain basic scientific principles as well as an opportunity for them to learn how to develop their own laboratories, using inexpensive and locally available materials.

Studies of what content should be taught

Because science and technology have developed so rapidly during the past fifty years, the material being presented to youth, especially in high schools (but in colleges as well) is often both out of date and inadequate, describing applications only, without sufficient discussion of the basic scientific principles involved. It is time for a review of the crucial experimental discoveries and theoretical developments which are directing the progress of science and technology. The Foundation is supporting studies to determine the material necessary for basic understanding of science for presentation to high school students. These studies are in early stages. The critique of the subject-matter material is being made by the scientific community, and the method of presentation is being worked out jointly by teachers and scientists.

Identification of talent and motivation of young people

The *recognition of talent* and the *motivation* of young people toward creative science and engineering are basic to our technical strength. But problems of identification and motivation are as difficult as they are important. In our fellowship program, judgment as to ability is made by panels of highly qualified scientists and teachers selected by the National Academy of Sciences. The judgment of these panels is based on past college records and letters of recommendation from the applicants' teachers. The selection of participants in the institutes program is made by the colleges and universities receiving the grants—and is based on criteria similar to those used in the fellowship program. Perhaps this human evaluation of the material supporting the applications is not the best method of identification, but it is the best we have today. We must always ensure that the best possible method is used, and for this reason we are giving limited support to research in the area of methods of identification. The results of these studies will also ensure wiser planning in programs of a motivational nature.

Scholarships

The National Science Foundation is the only federal agency with authority to conduct a broad undergraduate scholarship program and its authority is limited to science, mathematics, and engineering. To date, the Foundation has not requested funds for this purpose, basing its decision on the following considerations:

a) There is evidence that a significant percentage of promising youth do not continue into higher education. One of the reasons is financial, and another is lack of interest among students in post-high-school education. It is clear that in the best interest and welfare of the country we should stimulate more competent young people to undertake advanced training. The question is: Should federal scholarships in science and engineering for undergraduate studies be a mechanism for this stimulation?

b) One of the primary aims of a scholarship program is the identification and motivation of talented young people. Traditionally, identification has been made either by the individual himself, his family, or his teachers. With present funds available to us we have decided that at the present time it would be wiser to promote programs which help youngsters to identify their own

talents, programs to develop interest in the subject matter of science and mathematics, and programs designed to help teachers learn more about the subject matter of science and mathematics in order that they may be in a better position to stimulate their students through better understanding of the subject matter of science.

c) There is no clear answer to the question of relative needs among the different professions—law, science, medicine, education, etc. There is a moral question involved in encouraging a young person into a particular career (science or any other) before he has demonstrated a free career choice of his own. For these reasons we have some misgivings about the possible effects of a central federal program of science scholarships designed to affect career choices.

d) College enrollments are at an all-time high and growing rapidly. The percentage of youth going to college is increasing and statistical studies have shown that the probability of a student going on to college increases with his intelligence. There is a serious question, therefore, at this particular economic period, as to whether a federal science scholarship program would result in a significant increase in the percentage of able youth who enter college.

The problem, therefore, is not solely one of getting more students into college but also one of maintaining and improving the quality of their science education. We should and do make every effort to encourage local groups to provide scholarships to help identify and motivate our most competent youth to continue their education. Such scholarships should be open to students in any field of study.

Problems remaining

These programs constitute only a partial attack on the problem of maintaining excellence of training during a period of vastly increasing enrollments. In addition to emphasis on the content that should be taught and on the development of ability to think critically and effectively, the solution of the problem will involve billions of dollars for buildings, laboratory equipment, maintenance, and teachers' salaries. The problem of who should provide these funds—and how they should be administered—is still an open question. It is clear, however, that every effort must be made to stimulate local and state governments, industries, and private foundations to give support to wise programs to alleviate these difficulties. It is also in the interest of the Federal Government to help solve a problem so clearly related to the national welfare.

Consideration of how it should be done raises the question of whether technical leadership can be maintained by concentration on education in the sciences and engineering, without equal attention to the development of excellence in education in all fields. For example, one of the greatest assets we have is continuity between basic research and industrial production. This continuity results at least partly from our broad educational structure which provides a common elementary education and a common language with which our teachers, scientists, technicians, and industrialists can converse with understanding. Moreover, to be a wise and loyal citizen of the United States during this period of growing complexities of civilization and growing international responsibilities requires excellence in a liberal education for all of us. So it is to the best interests of the nation, of our military defense, and of science to

support excellence in education in all fields.

More specifically, if we are to go beyond fringe influences, we must face the following problems:

1. In a rapid expansion of school enrollments, forces tending toward mediocrity are great. *How can we rapidly expand a broad education for all and at the same time provide for the advancement of knowledge by ensuring excellence in education for gifted students?*

2. During this period, there is common acceptance of the proposition that our economy and defense depend directly upon our ability and creativeness in science and technology. There is now, therefore, great sympathy for support of training in the sciences and mathematics. *How can further support be given to education in the sciences in such a way that it will help alleviate—not compound—the problem of supporting education in all fields?*

3. Private colleges and universities face special problems different from those confronting state-supported institutions. *Should private institutions be considered separately, especially since they have contributed so much in the past and promise to maintain this excellence in the future?*

4. The Federal Government should make every effort to stimulate financial support from private, state, and industrial agencies, and should develop programs which are sufficiently flexible so that they can be modified as such support becomes effective. This means that the magnitude of state and industrial contributions shou[illegible]onsidered. *Is industry, for e[illegible]g to increase its co[illegible]ders of magnitud[illegible]al Government [illegible]in-terest of industry[illegible]pro-gram of support?*

The wisdom we apply in the solution of these problems will determine our moral, economic, and defensive strength. This wisdom, together with support, must come from local, state, and federal levels and from both public and private institutions. The National Science Foundation will continue to attack these policy problems in determining its particular role as an agency of the Federal Government and in determining the peculiar contributions it can make to the solution of the problem of supporting excellence in education in the sciences.

The Freedom Crusade of the University of Massachusetts

INTERFERENCE by state agencies with the operation of publicly supported colleges and universities has caused growing concern in recent years. This is the story of how one institution regained control of its personnel policies through a hard-fought campaign for public support led by its vigorous young president, Jean Paul Mather. The passages reproduced below are excerpts from documents and press clippings in President Mather's personal file, and are used here with his permission.—THE EDITOR

The problem faced by the University was sketched by Time *magazine on February 13, 1956.*

When Colorado-born Jean Paul Mather became president of the University of Massachusetts in Amherst two years ago at 39, he knew that he had a problem campus on his hands. Founded in 1863 as the Massachusetts Agricultural College, the university did not achieve university status until 1947. It had grown from an uninspiring prewar institution with four small divisions, 1,260 students and 45 buildings to one with 75 buildings, an enrollment of 4,300, schools of agriculture, engineering, nursing, home economics and business administration. But academically, says President Mather, today the University of Massachusetts is doomed to "increasing mediocrity." Reason: it has almost completely lost the power to control the caliber and size of its own faculty.

Since 1954 the university has been struggling inside a strange sort of straitjacket. In an effort to streamline the administration of various commonwealth agencies, the legislature placed them all —including the university—under the thumb of the Division of Personnel and Standardization. The division classifies jobs, sets salaries, abolishes or creates positions as it sees fit. It applies the same procedures to the university as it does to mental hospitals, prisons and road-building projects. The result is that Massachusetts cannot begin to compete with other campuses for top teachers. "What can I get?" asks President Mather. "Intellectual zombies."

Actually, the campaign was launched by President Mather four months earlier. After his determined efforts to establish a satisfactory relationship with the Division of Personnel and Standardization had failed, and Governor Christian A. Herter, for valid political reasons, had decided that he should not take the initiative in seeking a remedy, President Mather announced to his faculty, on September 12, 1955, that he would lead a state-wide crusade for a "Freedom Bill." Following is a portion of his explanation.

Whether your service with the University is long or recent, I will agree that you may say, "I have given or am giving the best that I have to the job I hold." You may say that as long as the administration has not interfered with your academic freedom as individuals, and as long as the administration has provided even a modicum of the necessities for your work, you are happy and have no further responsibility for the over-all program of the institution. But I say in response to this kind of analysis that as long as the number of positions, professional or nonprofessional, the job specifications that determine salary rates, the downgrading or elimination of positions, even the assignment of specific jobs to activities within the entire university educational program; as long as all these activities are controlled and directed by civil service clerks on a Boston commission who have no experience in either education or educational administration; then as sure can each and every one of you be that the total university program is slowly deteriorating—even if you are doing *your very best*. Please don't misinterpret that statement. When you are hired as an instructor, or assistant professor, or associate professor you are hired in good faith and by direct negotiation *only* with the University administration. What you don't know is that the administration may have requested a position at a much higher level *before* you were ever contacted. And even though appropriated budget funds were available the absentee personnel commission in its clerical omniscience refused the request with a curt blast to the president, usually stated "Your request of given date is hereby disapproved." Or you may have filled your job at a professional level two or three grades below the man who died, resigned, or retired ahead of you. This downgrading again by the same clerical omniscience and without reason. This is what I mean by "slowly deteriorating" for the total university program. And the blasts from the commission often remind me of the words of the bard:

> . . . but man, proud man
> Dress'd in a little brief authority,
> Most ignorant of what he's most assur'd,
> His glassy essence, like an angry ape,
> Plays such fantastic tricks before high heaven
> As make the angels weep; who with our spleens,
> Would all themselves laugh mortal.

In a current and future market, where the competition for professional people will become increasingly intense, each death, each resignation, each retirement, of a staff member will put this University into the competitive market with not only the rigidity of a control that is wrong in principle and practice, but also with inferior, unqualified, and incompetent judgment as to what the specific replacement needs should be. The history of the past and the present shows clearly that in the thirty-seven years since the Constitutional Convention which first destroyed the real powers of the Board of Trustees and administration of this institution, a series of acts, opinions and decisions have further emasculated, weakened, or destroyed even internal operating powers in personnel matters. Now all those administrators whom we contact through the nation as well as those who have carefully considered our situation in this state, recognize that the government and responsible authorities of this institution are nothing but rubber stamps over policies determined by absentee commissioners. And the policies in many instances modify completely the intent, the expressed purpose, even the final mandates of the legislature.

It is not necessary to review with you the specific acts, or opinions, or deci-

sions that have aggravated this major disease. These have been carefully gathered together during the past two years and analyzed as basic to diagnosis. Nor need I bother you by quoting here from the multitude of letters, correspondence, and processing papers addressed to this administration and previous administrations which show in every instance a complete lack of knowledge or understanding of rational personnel procedures, educational administration, or educational practice and policy as they exist in every other state university in the country. These documents, particularly some prize ones collected during the past two years, will serve a much better purpose before committees in legislative hearings. Yes, legislative hearings, for the prescription for this disease can only be legislation that will give the University of Massachusetts the same freedom, after approved legislative appropriations, that every other state university in the United States now has. And carefully and thoughtfully during the past year we have prepared such a bill, written by the best legal minds obtainable, and ready now for a bi-partisan introduction in the coming session of the General Court of this Commonwealth. We believe that in the long run we will win our objectives under this Freedom Bill. For the objectives are so obvious that it is difficult for me to believe that honest and reasonable men of good will could ever oppose them. I intend to spend a major portion of my time during this academic year discussing these objectives with people from Provincetown to Pittsfield, and most certainly with all of their elected representatives in the Legislature. This means that your new Provost and Academic Vice President will be carrying the major portion of responsibility for leadership on this campus in the months immediately ahead. I am sure that this will give him an excellent opportunity to get acquainted with all of you.

It should be clear from the outset that what is involved in this proposal is a matter of principle and not of personalities, of people and not of parties, of the quality of education for generations of youngsters to come and not of vested interests in authority. The matter has to be discussed publicly, *and* privately, because it is a matter of public policy, and because I am sure that once the people of the state understand it they will support this people's university in the basic belief that, after appropriation and under complete audits, the responsible and trained authorities of the institution should have the right to determine operating policies for the hiring, promotion, grading, and development of staff through a *campus-determined* program. . . .

Since the procedure we are about to take is one which affects each one of you, it is also important that you understand the exact basis on which we act, for there can be no compromise in a matter of principle. I can assure you that there will be opposition, and that it will be active. If anyone were to ask this question, "Given the accomplishment of this bill and the freedom you seek what specifically can you promise members of the legislature or administration of the Commonwealth of Massachusetts?", there is only one answer, idealistic though it may sound. The answer is—"The only result and the only thing we can promise is a better, and stronger state university. We cannot promise patronage appointments, any more than we can promise the admission of unqualified students or the modification of educational policies on the basis of any recommendation other than our own." Before God and man there is only one premise on which an educational institution, public or private, can operate. That premise is that members

of the staff are to be hired *only* on the basis of their professional competence and personal character. Anyone who thinks that a staff member in this institution should *ever* be appointed, be he janitor or full professor, on the basis of party affiliation, or religious belief, or residence, or color, or creed; anyone who believes this, is himself intellectually dishonest and for my money morally incompetent. It is the job of public education as well as private education to preserve a sanctified place for the development of the ideas of men, and that sanctity is violated whenever any compromise of expediency, great or small, is made in the personnel policy of an educational institution. No state university can ever be a patronage institution and hold its head up in the company of those who believe in the freedom of scholarship.

In the succeeding ten months, President Mather traveled 29,000 miles, delivering 327 speeches to an estimated 85,000 persons. Newspaper clippings chronicle some of the early results.

Editorial from the Greenfield Recorder-Gazette, September 16, 1955

Bold words and bitter ones were spoken earlier this week by President Jean Paul Mather of the University of Massachusetts. They deserved more attention than they received from outside the Amherst campus.

It may be, of course, that the objects of President Mather's attack are biding their time and eventually will strike back. They are capable of almost anything in the line of sly reprisal and they will fight ruthlessly to hold their power.

UM's prexy told his faculty that he intended to devote much time to a statewide crusade for freedom to run the university as it should be operated. He charged that it has suffered from a system of mediocrity since 1918 and that political control has not only stifled advance but has killed three of the past five presidents and effectively eliminated two others. . . .

That's throwing down the gauntlet to petty politicians with a vengeance. Whether Dr. Mather be Ajax defying the lightning, Don Quixote tilting with windmills, or Roland fighting against great odds at Roncevaux, probably depends upon the individual citizen's personal and political viewpoint. But it is definite that he intends to fight for his beliefs.

Every citizen who believes that education is greater than ward-heeling should back the UM president. Every person who wants the state university to rise above the sordid hands of Greater Boston politics should consider this cause a personal one. Only those who are content to wallow in cheap, vote-trading, cynical government for profit can be willing to make the university part of the spoils system.

Massachusetts has a national reputation for cheap politics. Now that its university has mushroomed, education is a tempting field for those who have been preying for years on highway and building construction contracts. An expanding staff affords great opportunity for political payments. We risk disgrace if we do not place academic honor above greed.

Dr. Mather deserves public support in his crusade. The University of Massachusetts has an able and eloquent spokesman whose words carry fire but those in position will be endangered if he speaks them. It is our duty to assure him a

hearing and to protect him from those who would apply a gag. The future of both the university and the state are at stake.

News item from the Cape Cod Standard Times

DENNIS, OCT. 27.—The Cape Cod Farm Bureau in one of four resolutions here last night, asked that the trustees and administrators of Massachusetts University be delegated with powers of supervision now handled by the State Personnel Board.

The resolution was the bureau's answer to a plea by Dr. Paul Mather, university president, that politics be taken out of school administration. The Personnel Board has assumed supervision over staff appointments and certain administrative affairs since 1918.

Editorial from the Worcester Telegram, November 11, 1955

Dr. J. Paul Mather, president of the University of Massachusetts, was exaggerating when he said his institution suffered from "go-to-pot-itis" because of legislative penury and tight state control of personnel.

The university president complained that the legislature allowed him only $100,000 for maintenance to keep in shape five million dollars worth of new campus buildings.

He attacked the State Division of Personnel and Standardization for its rigid controls over university personnel, charging that the institution was thus placed on the same level as the mental hospitals or highway department.

On both complaints, Dr. Mather is off base. . . .

The campaign entered a new stage when the bill was actually introduced. Both support and opposition were intensified.

News item from the Springfield Union

BOSTON, DEC. 5.—The "freedom" bill to give University of Massachusetts trustees more complete powers over hiring, firing, vacation and pay of all university personnel was filed in the House today by Reps. Isaac A. Hodgen (R-Belchertown), Sumner Kaplan (D–Brookline) and Thomas C. Wojkowski (D–Pittsfield).

Similar legislation, also signed by all of the trustees except State Commissioner of Education John Desmond and Commissioner of Agriculture L. Roy Hawes, will be filed in the Senate tomorrow by Sens. Maurice A. Donahue (D–Holyoke) and Ralph C. Mahar (R–Orange).

The bill is designed to remove all control of university faculty and other personnel from the state Department on Administration and Finance and its division of personnel. The same overall appropriation control would remain in the hands of the Legislature. The bill also provides for annual, rather than the present semiannual checking of university accounts.

The text of the bill is divided into six sections and is more than 1300 words long. The bill is expected to receive opposition of the division of personnel and from some members of the Legislature.

Excerpts from an article by John Harris in the Boston Globe, December 5, 1955

The young and able president of the University of Massachusetts, Dr. Jean Paul Mather, 41, has embarked on a crusade to win academic freedom for the university in the vital field of engaging the professorial staff that teaches our young men and women.

At present Dr. Mather believes the university is condemned to a program

of "increasing mediocrity" at the academic level, both through legislation placed on the statute books in the hurried closing days of the 1954 Legislature and through interpretations of that law made by the state's Division of Personnel.

It comes as something of a shock that in this late day such a fight should have to be undertaken for freedom of education in a state where public education got its start on this continent and where we still glory in the achievements of educators such as Horace Mann.

The issue, though, has been joined through the filing today of proposed legislation that would restore to the president and trustees of the University of Massachusetts a free hand in hiring members of the teaching staff. . . . Is the freedom Dr. Mather seeks in any way unreasonable from the viewpoint of what is done in other states?

The University of Massachusetts, where enrollment has been more than doubled in the past decade, is the only land-grant college in the United States which does not have the freedom he is asking.

The last university, save Massachusetts, to win that freedom was in neighboring Connecticut. Back in 1945 the University of Connecticut appealed to the Connecticut Legislature, which thereupon passed a law freeing the Connecticut university from personnel controls over the professional staff and putting them completely in the hands of the university and its trustees. . . .

The citizens of Massachusetts who support this university are traditionally eager that the highest possible teaching standards be maintained. Only in that way can the university be of greatest value to our young men and women and be of pride to our Commonwealth. It can be nothing but a source of earnest concern when the university officials charged with such a high obligation feel they must file what they have properly termed a "Freedom Bill." It merits our Legislature's most sympathetic consideration.

Excerpts from an article by Richard H. Cunningham in the Worcester Telegram, December 16, 1955

Members of the Massachusetts Legislature are due for some lessons in academic freedom from 41-year-old Dr. Jean Paul Mather, president of the University of Massachusetts. Dr. Mather wants the legislature to restore to his board of trustees full powers in hiring a teaching staff.

In recent weeks, Dr. Mather has been stumping Massachusetts to arouse public opinion in behalf of a bill to loosen some of the tightly rigid controls held by the state over the University at Amherst. Unless these controls are dropped, says Dr. Mather, the University of Massachusetts is condemned to "increasing mediocrity." . . .

Dr. Mather says these powers, vested in a Beacon Hill "bureaucracy," have acted to hamstring the proper administration of the state university. Members of his board of trustees, which includes top educators in the state, agree with him wholeheartedly.

There is another side to the story, however. Carl A. Sheridan, state commissioner of finance and administration, insists that controls be retained in Boston "to protect the taxpayer." Mr. Sheridan said he hadn't familiarized himself with details of Dr. Mather's "freedom bill," but that on principle he opposed it. "I'm for the taxpayer, and that's the basic question involved here."

A spokesman at the state Division of Personnel, in Mr. Sheridan's department, took much the same view. He rejected Dr. Mather's charge that the state "dictates" personnel administration at the university. He said the division does set up minimum qualifications for faculty

positions, and does establish a "standard" for personnel organization, allowing a percentage of 25 percent for full professors. . . .

Dr. Frank L. Boyden, chairman of the faculty committee of the university trustees, and headmaster of Deerfield Academy, told this writer that he believes Dr. Mather is absolutely right in his fight for freedom at the university. Dr. Boyden said there have been instances where good men have simply refused to come to the University of Massachusetts faculty after learning of the rigid state controls. And there have been cases when individuals have become weary of waiting for Boston's approval of their hiring, and have gone elsewhere.

Miss Grace Buxton, of Worcester, also a member of the Board of Trustees, declined comment on details of Dr. Mather's stand. But she emphasized that she had the "greatest respect" for Dr. Mather's abilities as a college president and educator. She made it clear that she agreed in general with his stand. . . .

The next legislature must choose between the viewpoints of Mr. Sheridan, insisting on rigid state controls in behalf of "the taxpayers," and that of Dr. Mather, who wants freedom of action by the trustees of his university.

Early in the new year, public support was growing so strong that Governor Herter found it necessary to take a hand in shaping the legislation.

News item from the Salem News
January 25, 1956

STATE HOUSE, BOSTON.—Governor Christian A. Herter has stated bluntly that J. Paul Mather, president of the University of Massachusetts will draw a definite line between professional and "housekeeping" personnel at the University of Massachusetts in the drive to obtain legislation permitting greater freedom of action for employment of educational instructors.

The capitulation of the university president came after a conference with Governor Herter, who has consistently registered opposition to allowing trustees and the school to hire labor personnel without regard for the state salary schedule.

Dr. Mather has had a problem locating instructors within the salary range set by state personnel and standardization practices. The difficulty has been in luring teaching members of the school staff at the beginning rate.

Legislation was proposed which would grant freedom for the school to employ persons at any rate they desire, but when it was offered, strong objections were raised to providing the same freedom of employment for persons not in the teaching or research field.

There has been considerable pressure exerted by the school officials through student publications and alumni bulletins as well as a widespread newspaper campaign to attract support for a plan to free the school of the same fiscal controls held on all other state agencies.

The issue became so embroiled that Governor Herter and President Mather had to sit down to talk on the issue and the governor said after the conference that Dr. Mather would draw a specific line between professional and "housekeeping" help.

"I have always felt that there was need for freedom to hire in the professional groups" Governor Herter told a news conference, but said that his opposition to general freedom in all positions was generally understood by the trustees and university president.

Commenting on the aggressive atti-

tude taken by Dr. Mather in the issue, Governor Herter observed "he is a dedicated man—dedicated to the future of the university."

Pending legislation permits unlimited power for the trustees to hire at will without regard for accepted personnel policies of the state and Governor Herter said that legislation will be rewritten to overcome objections he and many others have to the granting of too broad authority to a select group.

When hearings began before the Legislative Committee on Education in February, Governor Herter publicly supported the revised bill.

News item from the Boston Morning Globe, February 9, 1956

Governor Herter was recorded yesterday in favor of legislation to give the trustees of the University of Massachusetts the right to hire all faculty members and to set salaries.

Carl A. Sheridan, state commissioner of administration and finance, read a statement in behalf of the Governor to the Legislative Committee on Education.

Earlier in the hearing, Dr. J. Paul Mather, president of the University of Massachusetts, told the committee state control over hiring of university personnel "has left us with nothing but an increasingly inbred professional mediocrity."

"Massachusetts is becoming a boot camp for the rest of the nation," Dr. Mather asserted.

He said personnel were leaving for better paying positions in other states, and warned that continued control of personnel might endanger the $700,000 in Federal grants for the agriculture program.

Mather was also supported by Pres. Charles Cole of Amherst, Pres. Carl S. Ell of Northeastern University and Pres. Nils Y. Wessell of Tufts University.

Opposition was voiced by Norman MacDonald, executive director of the Massachusetts Federation of Taxpayers Associations, Inc., who charged "if the trustees of the University of Massachusetts are given complete control of employment, lock, stock and barrel great difficulties are going to arise."

MacDonald said he felt the institution ought to be given "certain freedom of action" as far as its major professional and top administrative staff are concerned.

But, he added, if the committee goes any further than that, "it will open the door to the total destruction of our personnel system involving 35,000 to 38,000 people."

Sheridan's statement on behalf of Gov. Herter read:

"The University of Massachusetts, to meet its obligations to the community, must expand not only to educate a larger portion of those of our population who desire higher education, but to meet the greater need for our increased youth population. During this period of expansion, it will be necessary to extend greater latitude to the Trustees of the University of Massachusetts to permit them to select and hire outstanding members of the teaching profession.

"To accomplish this, the board should be authorized to hire at any rate within the salary schedule for that class, provided, of course, that such hiring is made within the university's appropriation.

"Gov. Herter will approve legislation that will give the trustees of the Uni-

versity of Massachusetts the right to hire professors, assistant professors, instructors and lecturers, within such salary classification or range and within such appropriations as may be provided by the Legislature."

A few days later, President Mather was in hot water with the Legislature. In many of his addresses he had spoken of "untrained clerks in the Division of Personnel and Standardization, whose aggregate knowledge of education would cover a cufflink." A belated report to a Boston newspaper of a speech delivered in Amherst on February 3 quoted him as aiming this jibe at "politicians."

Item in the Boston Herald, *February 16, 1956*

House Speaker Michael F. Skerry (D., Medford) said yesterday he thinks University of Massachusetts President Jean Paul Mather "is obligated to make a public explanation of his statements" which reflected harshly on "politicians." . . . Skerry asked: "Did he refer to members of the Massachusetts Legislature?"

Item in the Springfield Republican, *February 19, 1956*

AMHERST, FEB. 18.—President J. Paul Mather of the University of Massachusetts today described as fantastic any notion that he would have disparaged members of the Massachusetts Legislature in remarks at a recent Associated Industries of Massachusetts seminar on the university campus.

Speaker of the House Michael F. Skerry in a statement last week called on Dr. Mather to clarify his "undignified but obviously carefully prepared statements." He demanded Mather answer if he referred to members of the Legislature when he said, "The university needed to be freed in staffing its faculty from the influence of politicians whose aggregate knowledge of education would crowd a cuff link."

"If legislators were not his target," asked Skerry, "to whom did he refer under his classification of 'politicians'?"

Dr. Mather said he had a personal appointment with Skerry Monday morning.

The president said the intent of the personnel bill filed by university trustees and legislative members of both parties is to place personnel administration of the institution directly under the Legislature instead of under the division of personnel and standardization, as at present.

The personnel bill would not have been filed, the president said, if he had not had full confidence in the Legislature to make enlightened bipartisan evaluation of the university's problems not only in personnel matters, but in all other matters affecting university policy.

"It is unfortunate for the educational welfare of more than 4300 young men and women students that statements I have made concerning the total program of the university have sometimes been misunderstood.

"Not enough attention has been given to remarks in which I have related the impressive fact that the General Court of Massachusetts has appropriated more funds for the university in the past two years in terms of capital outlay than had been appropriated in the entire history of the institution since 1863."

Then the Federal Department of Agriculture took a hand. Withdrawal of Federal funds was suggested as a distinct possibility.

Item in the New Bedford Standard Times, March 16, 1956

WASHINGTON, MARCH 15.—The Bay State this year will lose more than $700,000 in Federal funds for agricultural research and extension services through the University of Massachusetts, unless the "approved" Federal-State program gets off the ground by July 1, Agricultural Department officials said today. No other State's eligibility for these funds is presently being questioned. The money is used for research on crops grown in Massachusetts and enables trained workers to carry this and other farm information to families in rural areas through demonstration classes and publications. Federal law requires the co-operative programs to be run according to a work pattern agreed upon by the Secretary of Agriculture and the State agricultural college. The law also authorizes withholding of financial support whenever the Government feels the program is not being properly carried out.

Agriculture Department officials have concluded, after long and careful study, that the university's College of Agriculture is unable to accomplish the "plan of work" submitted for Federal approval. This word has been transmitted to the Massachusetts congressional delegation, officials of the State extension service and agricultural experiment station and President J. Paul Mather of the university. They were put on notice as far back as last August that progress had been unsatisfactory and Federal money might be withdrawn.

And last month, Assistant Agriculture Secretary E. L. Peterson again set forth the department's position in a letter which was interpreted in some quarters as unwarranted Federal intervention in State affairs. These persons said Peterson was interfering in a controversy between President Mather and the Division of Personnel and Standardization over the latter's tight restrictions on salaries and grades of university personnel. Mather favors a bill to give him more freedom over hiring and payroll matters at Amherst.

Mr. Peterson's letter made the point that the Federal Government felt the employment situation at the university had made it difficult to carry out Federally-financed programs. He said the practical effect of the division's salary controls was to prevent the filling of positions with the caliber of professional people needed to fulfill the work-load agreement between the university and the Government.

On April 12 the Committee on Education, with only one dissenting vote, approved a compromise version of the "Freedom Bill." But weeks went by without action by the House Ways and Means Committee. President Mather gave vent to his feelings in a public address on May 30, but still nothing happened. Finally, in July, the goal was in sight.

Item in the Christian Science Monitor, July 3, 1956

University of Massachusetts authorities today won a major initial victory in their campaign for freedom in hiring professional help at the university.

The House Committee on Ways and Means voted favorably on compromise

legislation granting the university administration the right to hire officer and professional staff members without prior approval of the State Division of Personnel and Standardization.

Originally Dr. Paul Mather, university president, had sought complete freedom in the hiring of all university personnel, but committee members reported Dr. Mather as completely in agreement with the compromise bill.

Under it the university may hire officer and professional staff members within budgetary limits and established salary classifications. The bill also allows the university authorities to grant starting salaries at levels higher than the minimum in accordance with the experience the appointee has had in similar positions elsewhere.

Item in the North Adams Transcript, July 10, 1956

BOSTON—Without any of the debate expected in some quarters, the House yesterday suspended rules to pass the so-called "freedom" bill to allow the University of Massachusetts trustees control over the pay and hiring of the professional and teaching personnel of the school. The bill now goes to the Senate.

Item in the Worcester Telegram, July 24, 1956

The Senate passed and sent along to the Governor a bill which would allow the University of Massachusetts to hire professional workers at rates higher than those set in state salary grades, provided the applicants had satisfactory experience in other states. The measure was previously passed by the House.

Item in the Boston Herald, July 27, 1956

Governor Herter yesterday signed into law an act authorizing the trustees of the University of Massachusetts to hire teaching personnel at higher pay than is permitted under state salary scales.

He also declared it to be an emergency law to make it effective at once instead of after the usual 90-day waiting period. Herter said he made it an emergency law so that the university could fill several vacancies in its professional staff before classes start in September.

On November 1, 1956 President Mather made another report to the faculty of the University of Massachusetts. An excerpt from this speech shows the spirit in which he accepted the victory.

On July 27th Governor Herter signed the Freedom Bill, Chapter 556 of the General Laws of 1956, for the University of Massachusetts. Two weeks later a supplemental appropriation of $100,000 for the implementation of this Act made it possible for the Board of Trustees of the University of Massachusetts to take unilateral, self-considered, and self-determinant action early in September creating additional full professorships in a number necessary to establish the ratio of associate and full professors to assistant and instructor level positions within the 45% to 55% ratio previously recommended by the Administration. The action included the hiring of professors at rates above the minimum under the established state schedule of salaries, *all this independently for the first time since 1924.* These actions were taken without asking a group of clerks in Boston, and after appropriation, without filing of papers or review by the same group. This *is* an historical achievement. Just as an aside, some elements of the entrained entourage expressed, through campus grapevine, the opinion

that the Administration would probably be turning public cartwheels over this particular point in evolution. I am telling you instead, and very quietly, that the bill accomplished 90% of what we expected it to, and that the processes under it are working very smoothly. The real challenge in this legislation is that the responsibility of evaluation of professional staff is now a real responsibility in the hands of the heads of departments and through the members of those departments. The head of department position is not a sinecure for social prestige, enabling the distaff side to pour tea gracefully in proper rank at social functions, but rather a position of administrative responsibility from which merit recommendations, promotion recommendations, recommendations for granting or withholding salary increments, hiring recommendations and firing recommendations are forwarded to the Deans, the Provost, and the President for final Board action working only and always toward the development of the highest caliber professional staff possible and on a day-to-day—year-to-year basis.

WHAT IS it that the young teacher needs in order to feel satisfaction in his work? Perhaps he needs to be given confidence and comfort. . . . The receiving institution doesn't begin to do justice to the new man whom it receives. It should set up seminars, conferences, possibly a complete program that could be called an internship, in order to make sure that the newcomer understands not so much his duties in the classroom as his duties in the institution: They are often complicated and mysterious. It should also make him feel he has joined an intellectual community—I am echoing Mr. Wilson again, but I am desirous of making it more particular than he did, by saying that the newcomer ought to be taken on as an equal of all the members of the department, which is notoriously not done.

It is precisely on this account that I maintain, as the British universities tacitly maintain, that experience is of no consequence. The young English scholar is from the outset the equal of Gilbert Murray and at the high table he says, "Murray, pass me the salt." He doesn't go through the kowtowing which oddly enough we have instituted in our otherwise democratic university. —From "Conserving for Teaching the Talent We Do Get—New and Old," by Jacques Barzun, in *Expanding Resources for College Teaching*, published by the American Council on Education 1956.

Renaissance in Higher Education

HAROLD J. DUDLEY

WHAT MAY prove to be a renaissance in higher education among private institutions of America is in the making in North Carolina. Unique in the annals of higher education in the United States, a new college is being conceived along different lines from any before. The institution, by order of the Synod of North Carolina, Presbyterian Church in the United States, will be located at Laurinburg, in Scotland County. The initial cost of the college, which will open in four or five years, will range from five to ten million dollars, including endowment.

The proposed institution will be the result of a three-year study which was made by the Synod of North Carolina of its own institutions under a grant from the Fund for the Advancement of Education. Some of the nation's most distinguished educators guided the synod in the survey. Among them were Dr. Oliver C. Carmichael, then president of the University of Alabama and former president of the Carnegie Foundation for the Advancement of Teaching; Dr. Francis C. Rosecrance, formerly dean at New York University, who served as chairman of the Advisory Council to the synod's committee; Dr. Sarah Blanding, president of Vassar College; Dr. John D. Millett, president of Miami University, Oxford, Ohio, and director of the recent study by the Commission on Financing Higher Education; Dr. John O. Gross, executive secretary of higher education for the Methodist Church; Thomas A. Spragens, President of Stephens College; and others. The directors who made the study were Dr. Roger P. McCutcheon, then dean of the Graduate School, Tulane University, and Dr. Donald C. Agnew, now secretary of the Southern Association of Colleges and Secondary Schools. Consultants who assisted in the study included Dr. Taylor Cole, Duke University; Dr. Paul B. Sears, Yale University; Dr. Myron Wicke, Board of Education, Methodist Church, Nashville, Tennessee; Dr. Hoyt Blackwell, Mars Hill College, Asheville, North Carolina; and Dean Noble Hendrix, University of Miami, Miami, Florida.

Concerning the report of their study and the action by the Synod of North Carolina, Dr. Alvin C. Eurich, of the Fund for the Advancement of Education, says,

> I would regard the study and the action as one of the most significant things which has taken place in higher education in church-related colleges generally throughout the country for a generation. . . . The Survey Commission made recommendations which, if put into effect, might have a far-reaching influence, not only on the Presbyterian colleges of North Carolina, but quite generally on church-related colleges throughout the United States. . . . I know of no other group in the United States that is working as vigorously to strengthen church-related colleges as the Presbyterian Synod of North Carolina.

The report, adopted by the synod in 1955,[1] recommended the merger of three existing institutions in North Carolina—Flora Macdonald College, a senior college for women, located at Red Springs, founded in 1896, with a student body of 341; Peace Junior College for Women, located at Raleigh, founded in 1872, with

[1] Copies of this report, *The Church and Higher Education—Report to the Synod of North Carolina*, may be obtained free of charge by writing to Rev. Harold J. Dudley, Box 6325, Raleigh, N. C.

a student body of 278; and Presbyterian Junior College for Men, located at Maxton, founded in 1929, with a student body of 185. It also recommended the establishment of a consolidated four-year, coeducational, quality institution, emphasizing the humanities. All governing bodies related to the institutions involved have taken official actions to consummate the establishment of the college.

By order of the synod a board of trustees numbering thirty-two was organized in October 1955, and has full plans in motion for the merger and establishment of the new institution. The program, from the outset, included conducting a campaign for funds in 1956 for a minimum of $3,000,000 (total pledged was in excess of $5,000,000); the selection of the town and site for the location of the college; securing of architects and developing plans for buildings; choosing administrative personnel; adopting of standards which will determine the curriculums; the choice of a name; and other necessary concomitants to the task of bringing the institution into being.

Perhaps the most significant thing about the entire undertaking is that leading educators in the nation, including some of those who were with the project from the beginning, are serving as consultants in guiding the trustees to establishing the college on the basis of the wisest known philosophy and principles of higher education. It is this which helps to make the program unique, for there is a determination to innovate rather than to follow set patterns. Dr. Eurich has been helpful in steering preliminary thought and planning, as the following statement will indicate:

> It seems to me that a new college of this kind under the auspices of the Presbyterian Church and growing out of a full recognition of the needs of our times, has a rare opportunity in setting up a program that points to the future. I think it would be unfortunate if this new college merely copies other institutions that are carrying on a respectable program but unimaginative. . . . I am sure that you are basing your plans upon a great vision for not only the future of this college, but the future of higher education in America.

For many years thoughtful members of the Presbyterian constituency in the Synod of North Carolina were concerned about its program of higher education. In addition to three Presbyterian senior colleges, three junior colleges, and a private high school in the bounds of the synod, there are two other Presbyterian institutions within the bounds of that part of the Synod of Appalachia which lies in the western part of the state of North Carolina. (The entire Presbyterian Church in the United States, embracing sixteen synods has all told only twenty-eight institutions of higher learning.) In 1951 the synod's Committee on Higher Education confronted the synod with the issue by pointing out that "questions have been raised as to whether all these institutions are most happily located . . . and as to the ultimate usefulness of certain institutions as presently conceived," and proceeded to say,

> Your Committee does not possess the professional competence to give serious answer to the above questions or others which might properly be raised. Such questions can only be answered adequately and intelligently by a thorough-going study made by persons who are at the same time sympathetic with the educational aims of the church and professionally competent to evaluate the present work and future usefulness of our already existing institutions. Your Committee would like to recommend that such a study be made and that it guide us in the formulation of our future policies. Yet we hesitate to make such recommendation. We remember that the Synod saw fit to ignore the able and expensive *Works Report* of a decade ago. We would strongly favor that a new and competent study be made only if there were assurance that the Synod would be committed to follow the advice of

such a study when it was made. Most decisions relative to educational institutions are made in the frame-work of emotion, personal loyalties and antipathies. It is to be doubted that the Committee can ever construct the strong educational program which we should have on this basis. In fact, we believe that unless serious study be made and followed, no intelligent approach to the educational problems which confront the Synod is possible.

At the same meeting of the synod the writer, serving as secretary of higher education, pointed out that the problem at that time was twofold: "the want of adequate financial support for the existing institutions and the want of Presbyterian students in these institutions." Contributions from the synod the previous year comprised only 10 percent of the income of the seven institutions. (It should be pointed out, however, that the per capita gift at that time was considerably in excess of that by other major denominations in the area to their institutions.) At that time, though the Presbyterian constituency of the state was not more than 5 percent of the total population, 15 percent of students in all institutions of higher learning were Presbyterian. However, of all students in Presbyterian institutions of higher learning, 47.27 percent were non-Presbyterians.

In 1952 the synod approved a report of its Committee on Higher Education, which committed the synod to action, as follows:

> The Synod, however, should not commit itself to action on this matter [the making of a request for and the acceptance of a grant from the Ford Foundation] unless it is prepared to enter whole-heartedly into the study and to implement the findings of the study, as they will strengthen the educational arm of the Synod.

From the beginning it was the hope of those making and guiding the study that it might become a pilot plan for other studies across the nation. With the increased pressure on private institutions to maintain economic status, not to mention competition with public education, similar situations to that in North Carolina occur across the nation. (Some of the advisers imply that the situation as regards "too many colleges" is even worse in other areas.) Already studies are in progress in other parts of the country. In the Presbyterian Church alone studies are either under way or recently completed in Virginia and Florida. As early as the first of 1955, Dr. John O. Gross wrote to the Fund for the Advancement of Education as follows:

> Let me tell you again how much the aid your Foundation gave to the Presbyterians in North Carolina has helped all of us. We have recently made a study of higher education for Methodists in Georgia, and we drew heavily upon the experiences of the Presbyterian study in North Carolina.

The writer has examined the Virginia study, and finds that there are sections of the North Carolina report copied either in full or with slight amendments.

In North Carolina, it was discovered that the synod, composed at the time of the study of 130,000 members, was endeavoring to support too many institutions. According to the advisers, approximately 100,000 constituents are essential to the successful financial support of a senior college and half that number of a junior college. Either the synod should reduce the number of its institutions or substantially increase its financial support. It was further pointed out that the trend in higher education today is towards coeducation, and in private education away from junior college education. The experts proved that quality education today is expensive, and that institutions which will survive are those which will provide the best of faculties and facilities, neither of which is an economic luxury. Deeply concerned, however, for the best returns on the financial investment in an institution of higher

learning today, the advisers declared that by and large the best stewardship investment is in the four-year coeducational institution.

Certainly, one of the things meant by the synod's action is that it is interested in "quality education," and that hereafter the synod intends to invest its money in four-year colleges, which the report maintains is the wisest and soundest investment that can be made. The report favors a small college but defines that to be within the limits of "the minimum optimum enrollment," regarded by experts to be from approximately 600 to 1,000. This doubtless spells out a policy of selection of students, since by 1970 the college enrollment in the United States will be double the present enrollment, and the Presbyterian constituency will doubtless increase proportionately. However, the report is clear in stating that by adequate endowment for scholarship aid, opportunity should be afforded any student who qualifies to pursue study in higher education.

The desired product of the proposed new Presbyterian college in the Synod of North Carolina is *quality alumni—leaders of tomorrow.* A secretary of one of the foundations in the United States, after reading the report, commented:

> It is an excellent report, and it surely strikes a sympathetic vein with us here. We are definitely "quality" minded rather than "quantity" minded. . . . Private money is not so tied down to the mass. It can be selective of its targets as the tax money cannot be, and because of these facts it is the prime responsibility of the private money to be selective and to do a quality job which the tax money cannot do. In the long run, it is a very big question whether the private money does not really do the greater productive job for the future of the race.

It was with "the future of the race" that the advisers in the study were most concerned. They were thinking of the influence the Christian church through higher education should have on the masses of this nation in the year 2000 A.D. and after, when they proposed that "a college must be excellent to be influential," and asserted that by necessity today the institution which is to survive must be sufficiently endowed and should possess the best in facilities and equipment. Dr. Rosecrance, speaking apropos of this, said: "We have a road to chart for the next fifty years. . . . We will cling to primary values. . . . Parents are going to build a different culture. . . . The idea of service must be restored and placed in family life as well as in the schools."

Not since 1861 has there been such unanimity of purpose among the citizens of eighteen towns and as many or more counties in the eastern part of North Carolina which vied one with another in bidding for the new institution. A recommendation of the synod was to the effect that the new institution should be located in the eastern part of the state. The movement was ecumenical in nature, cutting across all lines, drawing together all faiths and denominations, business interests, and social strata. Representatives of the towns reported that nothing before had so united the citizens in a common cause transcending economic and social considerations. One was reminded of the inimitable words of Dr. John D. Millett, in one of the numerous sessions during the days when the study was in progress, namely that "*there are times when men must rise above principle.*"

So it was that the cultural advantages which accrue to a community in whose midst a college is to be located became the foci of interest. So enthusiastic were the communities that one of them, a county seat, bidding for the institution, though boasting fewer than 1,000 residents and 100 Presbyterians, established a foundation to educate young men and women in the new college regardless of its location. When a representative of

one of the towns was told that of necessity disappointment would come to all but one community because they could not all win, his immediate reply was, "But they can't lose."

The eighteen towns seeking the college offered a total in excess of $20,000,000 to secure the institution. The successful town, Laurinburg, North Carolina, offered $3,000,000. In addition the Synod of North Carolina has pledged $1,600,000. Adding to these sums the assets of the existing colleges which are to be merged, the new institution has now initial assets of $6,000,000 or better. Since the doors of the merged institution will not be opened before 1960 or 1961, it is likely that by that time the assets of the institution will approach from eight to nine million dollars.

Governor Luther A. Hodges of North Carolina is quoted as saying that the higher education movement begun by the Presbyterians is the finest thing that ever happened in the state. Dr. A. C. Marts of the New York firm of Marts and Lundy has said that what the Presbyterians are doing in North Carolina "is the most statesmanlike thing I know anything about in higher education."

The publicity alone for the cause of higher education is immeasurable. For nearly twelve months every newspaper in the eastern and central parts of the state carried daily front-page stories on higher education in North Carolina, past, present, and predicted. One partisan is quoted as saying that the primary interest of the tens of thousands of people participating in the program was not commercial but "cultural and spiritual—a genuine desire on the part of all the people, everywhere, to uplift the communities in which they live and the whole area of Eastern North Carolina."

The A. N. Marquis Company of Chicago, publishers of *Who's Who in America*, in their quarterly bulletin appearing in the spring of 1955, reported on the North Carolina study under the caption, "How Much Is a Private Educational Institution Worth to a Community?" The article stated in part:

> The answers to these and other questions are being worked out in a process now going on in eastern North Carolina, where three colleges are being consolidated into one larger and stronger institution.

The article regards the North Carolina study as significant and refers to North Carolina as a "laboratory state . . . in a development that may affect many other commonwealths, just as Indiana was a laboratory state a few years back in the great movement to interest private enterprise in private education." The writer raises a doubt as to the wisdom of the merger but continues:

> These [actions] have awakened North Carolinians as nothing else could do, and if they awaken other communities to an awareness of their obligations to existing institutions, a great good will have been accomplished.
>
> *Not the least remarkable fact about this whole affair is the number of towns which sought the new college, the amounts of money they bid, and their disappointment at losing!* . . . The size of each community emphasizes a willingness to make great financial sacrifices to get a college. *The moral of the North Carolina situation is contained in the proof it affords of the wisdom of not taking too lightly the benefits of being in or near a college community.* Also, and incidentally, it is a situation which offers encouragement to those who fear an imbalance in education due to the growth in size and number of tax-supported higher educational institutions. . . . Are we now upon the threshold of an era when denominations are unable, and communities unwilling, to preserve the small independent educational institutions? The million-dollar-plus bids in North Carolina would seem to answer this question with a big NO!

The philosophy and principles which produced the North Carolina report are summed up as follows:

1. *Education is expensive business.* In fact, this is so true that private education is all but prohibitive. The report on the study of the institutions of the Synod of North Carolina revealed that an additional minimum income of $455,000 a year plus an additional $18,000,000 to provide for needed buildings and endowment would still "leave the Presbyterians with seven colleges of approximately the same size that they are now and with much the same differences in educational quality," and this sum would still be insufficient "to guarantee high quality if it must be divided among so many institutions." The report quotes William Allen White as saying,

> If Christianity is to survive, it must survive in the environment made by Christian leaders. . . . Unless those who believe in a Christian civilization are willing to sacrifice of their good hard-earned cash to educate Christian leaders, they will find in a few generations that their dream has vanished.
>
> After all it comes to this: Is the Christian faith strong enough in this country to pay for its own maintenance? If the American churchmen fail to support the kind of colleges that turn out Christian leaders, American life under another leadership soon will close the churches.

The question for churchmen, then, is, since church money is sacred, what is the best stewardship of the church dollar? The report concludes:

> We are under moral compulsion to use the resources at our command so as to derive the largest possible good from them. The church has no right, in deference to sentiment, or to an established pattern of procedure, to get less from its dollar than it otherwise could do. Only the wisest stewardship is a moral use of the gifts of God's people.

2. *Quality education is indispensable.* Education to be influential *must* be excellent. This is particularly true of Christian education which has as its goal the training of *full-rounded* leaders in the society of tomorrow. Thus there devolves upon the church the necessity of strengthening and improving its educational program. This may be done either by subsidizing existing institutions, by realistic support far beyond present support, or by the merging of some existing institutions and adequately supporting them. In any event an effort should constantly be made by the church to lift its standards to that level which will establish Christian higher education in the position of leadership which is second to none; hence, a criterion for public higher education, rather than vice versa. Thus, Christian higher education should *lead* and not merely copy secular education, should enunciate principles of education and a philosophy for all education rather than imitate public education. In this way the desired balance between public and private higher education may be maintained by quality if not by quantity. It is in this particular sphere—quality education—that church colleges have the opportunity to be supreme, for Christian higher education allows for the preservation of certain values which may be preserved only by a church college—what the North Carolina report refers to as "plus values." These are spiritual values, cultural values, and personal values, which while not "limited to the church's program of education, yet its institutions have in a unique way the responsibility for fostering of the great spiritual ideals that Christian people have cherished." The church college was the first to combine the Greek, Roman, and Hebrew traditions, merging the ethical and moral with the aesthetic and cultural, with genius and order, embodying the liberal and humanistic studies. According to the report:

> Education and religion working together, help people to achieve personal unity. . . . Subject matter, too, presented neither in an impiously intellectual manner nor in a piously anti-intellectual fashion, can intro-

duce college young men and women into the history of religions, Christianity in particular; provide a realistic frame of reference to give ultimate meaning and worth to personality; focus values to serve commanding personal ends of living; encourage young people to articulate their personal faith in terms of a Christian philosophy of life. . . . Instruction of this kind requires more scholarship, not less. . . . There is a guarantee here of more genuine freedom because more real alternatives are recognized and examined. . . . Nevertheless, the real test of the plus factors in a college lies not in the role that the religious spirit plays in courses, not in the number of student religious activities or groups, nor in the formal courses in religion. The real test is: does the religious spirit permeate the college atmosphere? . . . The church college must continue to be the chief source from which society draws its leadership and the church its leaders—clergy and laity both.

3. *Coeducation is the predominant trend today.* The study does not develop the philosophy of this trend, but it was not neglected in the conversations which produced the importance of the principle. It is tied in with the fact of mounting costs, the preference of the majority of girls for coeducation, and the normal procedure in a democratic society.

4. *Municipal junior college education is rapidly expanding.*

5. *All higher education has become highly competitive.*

6. *The successful operation of an institution of higher learning today is proportionately in ratio to locations* (*a*) a center of population to provide support and day students; (*b*) a cultural community; and (*c*) proximity to such facilities as transportation, accommodations, hospitals, etc.

7. *Education guarantees freedom of society in proportion that education itself is free.* The educators making the study held that this is best realized in Christian higher education.

8. *Finally, the church has a primary responsibility for the increasing number of its own students on the campuses of nonchurch institutions.* Suffice it to say that the number on nonchurch campuses is far in excess of those on the church campuses themselves.

In closing, there are two safeguards which should be observed by those who contemplate making similar studies and taking similar actions to those undertaken in North Carolina. First, in framing recommendations it has been discovered that it would be wise to provide for alternate recommendations. It is possible that pure logic might lead to such drastic recommendations that it would be impossible to undertake them immediately, or at all, whereas alternate recommendations might be undertaken step by step until the whole has been accomplished. Second, if the recommendations involve mergers, it is suggested that those responsible for consummating the mergers employ the most expert engineers available for guiding in the selection of the proper location of the institution. Competition has its merits but also its demerits both during and following the "campaign." Fortunately, capable engineering concerns are available. Costs for their services are inconsequential in terms of other considerations.

Technical Institutes—A Study of Need

GORDON M. HARRINGTON

HIGHER education in this country sprang from the need for educational preparation of the clergy. Though the objective was vocational, the curriculum content needed for the purpose was broad. In addition, college faculties were self-reproducing with a resulting tendency to perpetuate existing conceptions of the nature, function, and content of advanced education. Accordingly, collegiate education became firmly established in the pattern of broad liberal studies.

The changes in life precipitated by the industrial revolution with its accompanying specialization of occupational function created pressures for specialized higher education preparatory to a number of vocations. One of the most marked of these was the demand for engineering education which arose in the latter part of the nineteenth century. In the face of strong resistance from college faculties who felt that higher education was being prostituted on the narrow altar of economic utility, schools of engineering soon were permanent fixtures on the collegiate educational scene. In the twentieth century history has again been repeating itself with the technical institute bearing much the same relationship to the junior college as formerly the engineering school bore to the liberal arts college.

While all is not "sweetness and light" among the philosophers of higher education on the problems of intensive technical education vis-à-vis broad liberal studies, the real question is no longer one of value judgments but rather one of facing the facts of life in our present culture. Two basic forces are going to influence development in the immediate future of educational programs beyond the high school. First, in a society where most people must work for a living the demands of employers cannot be ignored. Second, the substantial proportion of able high school graduates not seeking further education is a matter of considerable current concern. There is some evidence to indicate that many of these young people come from families of limited means or of noncollegiate orientation and that they will respond only to further educational programs whose economic utility is clearly evident *to them*. Whether or not the value judgments underlying these pressures are narrow or unsound, the fact is, they will shape the development of a considerable segment of higher education in the next few years. The philosopher who backs broad liberal studies may perhaps console himself with the possibility that in the more distant future the role of the technical institute may evolve toward a broader program, just as did that of the engineering school, once its utility was recognized and its graduates faced wider responsibilities.

The Connecticut story on technical institutes is perhaps of broad interest since it indicates how some of these needs develop, the extent of the need, and some techniques which are generally applicable to basic planning of specialized postsecondary education. Perhaps of most significance is that Connecticut, which is typical of New England in its conservatism and inclination to move in new directions only when the evidence is unequivocal and the need clearly evident, is planning a major educational development arising from careful examination of its own needs and experience.

Following the war, veterans' demands for educational opportunity in technical fields led to the establishment by the Connecticut State Board of Education of the Connecticut Engineering Institute in Hartford, now known as the State Technical Institute. At the time of establishment it was believed that the demand for technical education was a purely temporary postwar emergency phenomenon and no plans were made for permanent housing of the institute. Rather, the institute led a peripatetic existence first occupying a section of the local vocational high school, then an old elementary school building, and more recently quarters of reasonable adequacy, leased over a store block in the center of the city.

At the present time the school offers regular curriculums in mechanical technology, tool technology, and electrical technology, all of which are ECPD accredited. It also offers a large variety of courses in the evening. Administratively the institute is regarded as an upward extension of the Connecticut vocational school system. The vocational philosophy applies. The essential distinctions are in the curriculum which is pitched at a higher level of demand on the student and which is concerned with mental skills of a technical nature rather than manipulative skills of a craft nature.

Contrary to expectations, the demand for engineering-technician education did not decline with the passing of the veteran enrollment bulge. Between the opening of the school in 1946 and the close of the 1955–56 school year enrollments of full-time students rose from 32 to 164. In the same period of time the evening program which originally served 115 people had increased to 947 enrollees. By this time the demand had grown to such magnitude that it far outstripped the available facilities and the institute was forced to establish extremely stringent admission standards both for the full-time program and for the extension program.

By the summer of 1954 the State Technical Institute had turned out 248 graduates. Of these 178 were employed, 97 percent of these being employed in the field for which they had prepared. Twenty-nine were attending engineering colleges pursuing work toward the baccalaureate degree, 36 were in the Armed Forces, one was deceased, and one who had just returned from service was unemployed. The remaining three graduates could not be located.

By 1954 the success of its graduates in industry, the highly favorable attitudes of the industrial world, and the demands on the part of students for admission had established State Technical Institute as a permanent fixture on the Connecticut educational scene. It was clearly evident that permanent facilities were needed. Accordingly, the General Assembly in 1955 on recommendation of the State Board of Education appropriated funds for an educational facility in Hartford which was to house the Hartford Regional Technical School, a vocational high school, but also was to provide a capacity for 360 students in a technical institute program. At this same session a bill was independently introduced through local industrial and educational groups to appropriate funds for building a technical institute in Norwalk. This bill barely failed of passage.

While it is fruitless to speculate what might have happened under different circumstances, it is probable that the bill failed primarily because the state had no policies on technical institute development. The existing institute in Hartford had grown like Topsy and by accident. It could scarcely be discontinued but on the other hand the state had not faced the problem of whether or not a broad technical institute program should be provided under public auspices. However, the industrial pressures which had

led to the introduction of the Norwalk bill continued to mount and the State Board of Education initiated a study to determine technician needs and to make concrete proposals for action.

It was first necessary to develop a definition of the term "technician" to which the study could be tied. To this end a preliminary statement was developed and then reworked by a committee of personnel managers. The final product was the definition of three major job levels in technical occupations requiring significant amounts of training. These follow:

A. *Mechanic level*
   1. High degree of manipulative skill
   2. Theoretical and technical knowledge sufficient to translate blueprints and specifications into the machine and tool operations necessary to make the product
   3. Average intelligence sufficient for job duties

B. *Technician level*
   1. Practical knowledge of production or laboratory processes
   2. Knowledge of fundamental engineering and scientific theory and principles
   3. Can apply engineering principles and techniques to the solution of *common* problems
   4. Above average intelligence necessary for job duties

C. *Engineer level*
   1. Thorough knowledge of engineering and scientific theory and principles
   2. Practical knowledge obtained on the job
   3. Can apply principles and develop *new* techniques for the solution of *difficult* problems
   4. Superior intelligence required

Whatever may be the crudity of these definitions they have been found meaningful to personnel managers and engineering department heads in that they specify distinctions between jobs according to the practical knowledge or skill required, the theoretical knowledge required, the level of problem-solving behavior required, and the general intelligence level necessary.

It will be noted that these definitions apply to job levels and not to individuals. In practice some technician graduates with added experience may be capable of functioning at the engineer level while some graduate engineers may not be capable of working above the technician level. These are matters of individual differences in ability while the educational concern is with the type of education most appropriate as preparation for each level. Thus, most appropriate avenues for the entry into the three levels are vocational-technical schools, technical institutes, and engineering schools, respectively, assuming that preparation should be offered at the lowest grade level at which the content can be mastered in order to maximize educational efficiency. In expanding upon these definitions for discussion purposes the pamphlet of the Technical Institute Division of the American Society for Engineering Education, *The Engineering Technician*, proved to be a particularly valuable document.

Given agreement on a definition of technician it was possible to turn to the core of the Connecticut study—a survey of industrial need for technicians. To this end a questionnaire was developed and tried out in one section of the state. The final questionnaire contained questions on the present employment and job vacancies for engineers, technicians, and others. Questions were also included covering the proportion of engineering time spent working at the technician level and about optimum staffing of technicians and engineers. Provision was also made for information regarding sources of technicians, turnover, and kinds of training needed both

for full-time technician programs and in extension work.

To carry out the survey, committees of personnel managers were organized in each area of the state through the cooperation of the local manufacturers association or manufacturers division of the chamber of commerce. After a training session and a discussion of the methods and purposes of the survey the personnel managers and officers of the cooperating association prepared lists of all of the local concerns which, in their judgment, would use engineers or technicians. These lists were then divided up among the personnel managers on the committees and each individual made arrangements to interview the personnel managers of the companies on his list. For small companies the interviews were with officers of the companies, for medium-sized companies the interviews were with the personnel managers, while for large companies it was sometimes necessary to have a joint interview with the personnel manager, the chief engineer, and the research director.

The interview technique was to present the job-level definitions and supporting information and discuss these with the company representatives until it became apparent that there was clear understanding and agreement. This was an extremely vital part of the interview because the term "technician" has such widely different meanings in different industries and in different companies. In some companies, particularly in the chemical industry, production workers were labeled as technicians; in others craftsmen were called technicians; and in still others certain kinds of engineers were so designated. Similarly it was not uncommon to find technician positions under a job title of engineer. Once the definitions used in this study were understood and agreed upon it was possible to ask the questions on the questionnaire on that basis.

The discerning reader who has had some experience with this type of investigation will recognize that in some cases the person interviewed would not have the information required at his finger tips, and some study within the company would be necessary. This was true, however, only for the larger companies, and was anticipated by selecting as interviewers the personnel managers from the larger companies where detailed internal studies would be necessary.

Both before and after the survey a number of questions were raised about the validity of response. In particular it was suggested that many personnel managers confronted by an acute personnel shortage would overestimate their needs. Pinning down present need to the actual job requests on file in the personnel office was one method of meeting this problem. Perhaps the most important consideration, however, was stressed in the training sessions and in the interview itself. Company representatives were well aware of the fact that the results of this study were to be used in planning publicly supported educational programs. Such programs are financed from the tax resources of the state. Industry is quite sensitive to the corporate tax load. From the point of view of industry it is assumed that where a need exists provisions to meet that need represent an efficient utilization of tax funds. On the other hand, should a company inflate its needs, planning based on these inflated needs would represent a useless tax burden. In the opinion of the interviewers and the survey staff this consideration was extremely effective in begetting carefully considered answers to the questions asked.

Other questions of validity also arose. Selecting companies to be surveyed on the basis of consensus of manufacturers

that these were the companies which would account for all the engineering technician employment appeared to be simple and efficient. Wherever there was a case in doubt, the company was surveyed, and a number of companies so covered did not employ either engineers or technicians. It was anticipated that even though a few companies might be omitted by accident most of the engineering and technician employment would be accounted for and that this would give a conservative base on which plans could be built.

On total employment in all occupations the companies surveyed accounted for approximately half of the total manufacturing employment in Connecticut. However, comparisons with Bureau of the Census and Bureau of Labor Statistics data revealed that the proportion of known engineering employment and known draftsmen employment accounted for was directly proportional to the percentage of total manufacturing employment covered. In short the companies covered appeared to act as a random sample of the state industrial picture rather than a selected group.

Both to test the randomness of the sample drawn and to determine the reliability of responses, a team of interviewers was employed and sent out to interview a random sample of Connecticut industries. Data obtained in this sample survey were compared with the data obtained in the original survey. The data obtained in the original survey were also analyzed in detail by area and industry type and compared with corresponding analyses of Bureau of the Census and Bureau of Labor Statistics data. Since the original sample proved to be random for engineers, draftsmen, total employment, and ratio of engineers to total employment by industry type and since the random check sample seemed to support this belief, it was assumed that the original survey was random with respect to the need for engineering technicians.

Accordingly the survey results were treated as a stratified random sample of approximately 50 percent of the total technician and engineering need. Results which are reported here are, therefore, generalizations representing the over-all industrial scene in Connecticut.

In tabulating the results it became evident that the need for technicians in relation to the over-all need was small in textiles, apparel, food, and printing and publishing. Accordingly these industries were not included in the final tabulations. The construction industry and public utilities were also omitted but for somewhat different reasons. In construction it was evident that there was a need but the place of the technician is not yet well enough established in this field to determine its magnitude. Since the State Technical Institute in Hartford was planning to provide for instruction in this area in its new facility, it seemed wiser to wait until the Connecticut construction industry had had some experience with the institute graduate before assessing the need.

It was known that the State Highway Department could use a large number of technicians. The public utilities provided their own training for technicians and did not expect to use institute graduates. There were some indications, however, that, should technician education become well established, public utilities would re-examine their personnel structure. It was reported, for example, that this was beginning to happen in New York State where institutes were much more firmly established. The Connecticut study then covered the need for technicians in Connecticut research and manufacturing industries other than foods, textiles, apparel, and printing and publishing.

It was indicated previously that, while the selection of industries to be sur-

veyed was not done on a random sampling basis, checks with further surveying gave some reason to believe that the samples were in fact representative. Estimates of the number of engineers and the number of technicians in the state could be obtained in three different ways—first from the survey as a whole, second from the survey of geographic areas of the state, and finally from analysis by industry type. All three methods yielded results that were within 10 percent of each other. It should be pointed out here that in the sequel the choice between bases for estimation was determined by what seemed the logical situation. It happened, however, that each one represented the most conservative alternative.

The survey results indicated that there were approximately 13,500 engineering positions in Connecticut manufacturing and research, and 14,600 technician positions. Of these, 15 percent of the engineering positions were vacant and about 20 percent of the technician positions. Since vacant existing positions seem the best measure of a personnel shortage it is evident that the technician shortage, at least in Connecticut, was even more acute than the shortage of engineers, which had been so much more widely publicized. It was also reported that 16 percent of graduate engineering time was spent on work at the technician level. However, there were extremely wide variations between companies on this estimate, ranging from 0 percent to 75 percent. It is quite possible that this wide variation reflected actual differences between companies especially since other responses from the companies were internally consistent. However, the figure should be used with caution. Coupled with the evidently critical technician shortage, it does indicate that under circumstances of more ready personnel availability the ratio of technicians to engineers would be somewhat larger than the ratio found.

These results showed an actual employed ratio of 1.0 technicians per engineer with a position ratio of 1.1 technicians per engineer. Both of these were below the 1952 United States ratio of 1.2 technicians per engineer in metalworking industries. This indicates the estimates of technician deficit are extremely conservative when one considers the ratios of 3 to 1 or 5 to 1 recommended by the United States Office of Education and engineering societies, and when several national companies are now staffing on a policy of ratios close to 2 to 1. Even at these small ratios the annual need for technicians is substantial. While there was considerable variation between smaller companies in their estimates of replacement rates, the larger companies seemed to be in reasonable agreement and came close to the average estimate of a replacement and normal expansion rate for technicians of 8.7 percent. This represents an annual need in Connecticut for 1,261 technicians *beyond* meeting the current deficit.

One factor in this technician shortage in Connecticut was the rapid increase in engineering employment. Between 1940 and 1950 the ratio of engineers to employees in Connecticut almost doubled so that the ratio was close to twice the national average. This is often considered an indication of emphasis upon research and development rather than mass production, a situation where the place of the technician seems best established. For technical education planning purposes it is also extremely significant that no one company accounted for an unduly substantial part of the total need.

Good judgment dictated that facilities should be planned to meet the continuing or replacement need but not the current deficit. Thus allowing for a

50 percent attrition rate, it was apparent that facilities were needed for about 3,800 students simply to meet replacement needs without giving any attention to alleviating the deficit which it is evident will increase before facilities can be provided.

A critical question became whether or not there will be sufficient student demand for a program of this size. Another study found a potential demand in 1965 for public junior college programs of 25,340. New York State experience suggested that a substantial portion of this group would be potential institute students, although this would of course be conditioned to a considerable extent by the kinds of terminal programs available. It did seem reasonable though to expect that 15 percent of this group would prefer to enroll in technical institute programs.

The approach finally used was that of the President's Commission on Higher Education which took the two-year post-secondary potential to be those youth above the fiftieth percentile in general mental ability and the four-year potential to be those above the sixty-sixth percentile. The two-year terminal potential is then the group between the fiftieth and the sixty-sixth percentile in general mental ability. The technical institute potential was taken as the group which also was above the median in scientific aptitude. These criteria were substantiated by studies of the State Technical Institute testing program. On the conservative assumption that general mental ability and scientific aptitude are independent qualities and that the technician potential is predominantly male, it was found that student potential was just sufficient to meet need. The essential problem, then, is to tap the full potential.

The education of full-time students does not represent the only service a technical institute provides to the industrial community. Technological development has necessitated a continuing technical education program for those already employed if they are to remain abreast of the field. Employers' reports of the numbers of their employees who definitely needed technical courses of one kind or another showed a potential of 9,275 in extension enrollment. This figure may indicate need, but potential extension enrollments are very much subject to the vagaries of human behavior. Since the extension enrollment at the State Technical Institute in Hartford was 57 percent of the indicated Hartford potential it might be inferred that the minimum state-wide demand for extension institute programs was 5,300. The limiting factor on enrollments at State Technical Institute, however, has been facilities, rather than demand; hence it should be concluded that 5,300 was a minimum figure and 9,275 was probably a closer estimate of true demand.

For both the full-time and the extension programs almost all the needs were in conventional technical areas requiring a broad program of technical training rather than narrow and intensive specialization. The greatest need by far was for mechanical technicians; electrical technology followed a distant second with an indication that about half of the group needed could profit from a somewhat heavier concentration in electronics. Tied for third place in demand were chemical and tool technology. Finally there was an indication of need for something which might be called the technician level equivalent of engineering administration. The need here was for someone with a combined technical and administrative education to fill lower level supervisory positions in engineering administration, plant administration, and technical sales. The extent of demand has been ranked here, 1, 2, 3, 4; the ratio of extents of demands between adjoining ranks was 2 to 1.

Some needs were indicated for a number of other kinds of technicians, but these were not sufficiently great to justify planning programs at this time. These other areas were primarily nuclear technology, engineering mathematics, and bacteriology.

While other areas than need were investigated only one other aspect of technical education seemed to present a burning issue. The development of public junior colleges across the country has been accompanied by the practice of granting associate degrees. Pleas for the same practice in Connecticut's technical institute have been made. On investigation it was found that many high school counselors apparently have tended to view technical institutes as educational agencies for pupils interested in a postsecondary education but incapable of work at the collegiate level, and have referred qualified students to degree-granting institutions and have led unqualified students into the belief that they would be accepted by institutes. Of more significance to the graduate is the tendency of employers to establish salary differentials for degree holders. These problems connected with recruitment and placement have led many institutes to grant degrees. Today, about half of the two-year institutes in the United States accredited by ECPD are degree granting.

While so far the Connecticut State Board of Education has shown no inclination to grant technical institute degrees, the state's institute graduates have transferred, on an individual basis, to Rensselaer Polytechnic Institute, Worcester Polytechnic Institute, Case Institute of Technology, Clarkson College of Technology, Brooklyn Polytechnic Institute, Indiana Technical College, Union College, Hillyer College, Tri-State College, and the University of Connecticut, with transfer credit ranging from 1½ to 2½ years. In all, 41 graduates have so transferred, of whom 16 have graduated from their respective colleges and 23 are still enrolled. This experience would seem to establish level of instruction, and sooner or later the question of degrees must be faced. The essence of the problem is whether level of instruction or a broad program of general education should be the basic criterion for degrees.

As a result of the study a building program proposal was considered by the State Board of Education providing for the biennium 1957–59 a 780-pupil facility in Norwalk, a 500-pupil facility in the Torrington-Waterbury area, and a 325-pupil facility in eastern Connecticut. For the 1959–61 biennium the proposal provided a 625-pupil facility in the New Haven area, a 325-pupil facility in the Bridgeport area, expansion of the present State Technical Institute to provide for 1,110 pupils in the Hartford area, and expansion to provide for 120 pupils in the Danbury area, either at the Danbury State Teachers College or at the proposed Norwalk Technical Institute. This proposal would provide a complete technical institute program for the state in two bienniums. With a reduction of about one-third in initial student capacity, the Board voted to send to the legislature capital appropriation requests for the 1957–59 biennium of $7,020,100 for the first three institutes with the remainder of the program to be developed in the following biennium. Thus the Connecticut technical institute program was formally launched.

Implications of Increasing Enrollments for Academic Standards and Methods

MARTIN QUANBECK

In the discussion of the consequences of increasing college enrollments, the welfare of the student ought to have a central place. Occasionally I hear discussions of the problem which seem to consider the college graduate as the inanimate product of an impersonal process; and people seemingly take the position that if colleges can achieve their purpose better with fewer and better-selected students, why, then, let's shut out more of them; and if we need more to balance the budget, let's let them in. Colleges may have special purposes, it is true, but they cannot afford to forget that they exist for the people—for the student and for society as a whole—and not for the purpose of balancing budgets. It seems high time that more attention be given to the question of how increasing enrollments will affect the quality of instruction, personnel, and auxiliary services and what kind of society these changes will produce. It is time that students and the public at large become interested in the question.

No time need be taken here to spell out the dimensions of the rising tide. That has been adequately done. We have been told that it is probably conservative to estimate that twice as many students will be clamoring for admission to college twenty years from now as do so today. For with the trend toward a larger proportion of youth entering college from decade to decade pretty well established, it may well be that three to four times as many will seek entrance—that we will not need to be concerned only with an increase from 2.5 million to 5 million but to 9 million.

It is not too difficult to visualize what would happen should all these students crowd into our present classrooms into classes taught by our present teachers. Yet, in some few colleges, a doubled enrollment would be a good thing. Most small colleges have some classes that are too small to be either interesting or efficient. In any college of fewer than 500 students, the number of classes with fewer than ten students is likely to be quite large. If this is not the case, the curricular offering is probably restricted to the point where student needs are not met adequately. There are about 800 such small institutions of higher education—most of them colleges—in this country. In my own college, which is a little larger than the minimum I have set, I estimate that we could double our enrollment with a 50 to 60 percent increase in faculty and administrative staff.

Unfortunately, the small colleges do not get the largest increases when enrollments mount. During the two-year period from 1953 to 1955, for instance, the seven largest private liberal arts colleges in Minnesota had an enrollment increase of approximately 14 percent. The seven smallest colleges increased only 2 percent during the same period. Enrollments at the state institutions—the five state teachers colleges and the University of Minnesota—meanwhile showed an increase of almost 26 percent. The nine public junior colleges, though still small, showed in these years a gain of over 20 percent. These statistics indicate two things, I think: (1) The larger colleges will no doubt experience the greater pressures. (2) State institu-

tions will be besieged by greater numbers of students than private ones. These trends are natural and not surprising. They can be explained largely in terms of differences in quality, prestige, and tuition costs. But the fact remains that those institutions which from the point of view of class size, at least, could best afford to take additional students probably will not get many. Those institutions which need to grow to operate more economically and efficiently may not see much growth. To put it in another way, those colleges in which additional students would really improve the quality of instruction are likely to get relatively small increases unless the larger colleges bar their doors or the smaller colleges are made more attractive in terms of the quality and price of the program they offer.

There are other differences in enrollment pressures. Although during the two years previously mentioned, from 1953 to 1955, the enrollment increase in technological schools throughout the nation was approximately the same as in the liberal arts colleges, the shift toward the technological schools has now already begun. I think it is safe to say that the demand for specialized manpower in technical fields will make for considerably greater pressure on schools providing this kind of education. The demand for public school teachers has already developed pressures on the teachers colleges. Again the pressure will be directed largely at institutions which are already large enough to operate efficiently and, often, already overcrowded.

The fact that during two years when the total enrollments in higher institutions were increasing by almost half a million students (a small portent of things to come), there was a net decrease of thirteen institutions in the country is not encouraging. For though this does not mean a proportionate loss of facilities because some mergers occurred and some facilities were added to other colleges, it does indicate an actual reduction in the number of separate units. And we need seriously to raise the question whether the best education for the big student wave will come from increasing the size and actually decreasing the number of institutions, or whether we need to establish new colleges. In some states the community college is one way of avoiding increasing the concentration of large numbers of students on a few campuses at the same time that they meet the needs of students with meager economic resources or limited academic ability or interest. Minnesota has not yet made much progress in this direction.

A possible way of meeting the problem is, of course, to restrict enrollments. Presumably this would be done on the basis of college aptitude. This could change the character of the student population and raise academic standards in the colleges. This would be a raising of standards by greater selectivity of students, not by improved instructional procedures. In an attempt to retain what they consider ideal conditions for their particular kind of educational program for a select group of students, some private colleges will limit their enrollment to approximately their present student body. My observations lead me to conclude that while this will be true of some colleges, their number is small and most of these already have very high admissions standards. Their action will hardly affect appreciably either the general quality of the college population or the number served. I believe that very few colleges in the Midwest will seek this solution to their problems. There may be a slight tendency to raise standards, especially to enforce their present admissions standards more rigorously.

It is important that any raising of admissions requirements be done on the basis of a careful study of the success in

each institution of students of marginal ability, as judged by the admissions standards used. If modifications are made on the basis of such a study, it would seem that only good could come of it; for all students—both those excluded and those admitted—are better served if the students in the college are competent to do the work required. Colleges must not be allowed to lose sight of the fact that they exist to serve students and to make them better able to serve their fellow men. Any general and extensive raising of admissions requirements is not likely to be in the best interests of the individual or of society at a time when the ability of the common citizen to think clearly and effectually about the problems of the day is so crucial and when the demand for people with general, professional, and technical training is outrunning the supply.

It seems unlikely, then, that we shall attempt to solve our educational problems either by holding down the number of college students or by creating a large number of additional institutions. And more than likely the place we shall have to deal with increased numbers is in the institutions which are already large and have been growing rapidly in recent years.

Can the problem be met by following present policies of curriculum and staff and simply hiring more faculty members and instituting a great building program? There are two great obstacles here. One is money. In the past decade colleges and universities have been doing the best job they have ever done in getting money for education. Educational and general income more than trebled between 1940 and 1950, during a time when the cost to the student did not quite double. Yet it is far from adequate for the years ahead. New York estimates that $750 million must be spent there on physical plant alone. Dr. John D. Millett, writing for the Commission on Financing Higher Education, says that though the value of college plants in 1950 was over $4 billion there is a need for $3.5 billion of construction in the next decade—and that would only fulfill our needs for a 2.5 million enrollment. Unless both voluntary gifts and tax levies for higher education are tremendously increased, the job cannot be done in this way.

Yet even if this nearly impossible task is accomplished, there will be a deficiency of qualified teaching personnel. The age group now in the graduate schools is largely a depression-born population, born in a period of low birth rate. Out of this small group the colleges must compete with industry and all the other professions for their personnel. Of the estimated 35,000 doctoral graduates expected to arrive in the period from 1953 to 1958, colleges may get the larger share, but 100 percent of them will not be enough.

Both rising educational costs and dearth of teachers will play a part in forcing us to consider other ways of meeting the instructional problems. Some of the physical facilities can be made to go farther with better utilization. On the operational side one answer is to increase class size. There will be many objections to this solution, and it is especially its effect on teaching methods and academic standards that concerns me here. It is an easy solution and must not be adopted lightly.

Yet several educators in recent years seem to have concluded that larger classes are the answer to the problem. Dean Cherrington of the University of Akron argued recently that in American education we have been doing too much spoon-feeding—that the student is fed bite by bite and even "burped" from time to time. On the other hand, he contends that the student really learns intensively and extensively when his enthusiasm, kindled by the skillful instructor, drives him into the library and the laboratory

to explore on his own. We must throw an increasing amount of the responsibility for his own education on the student, he argues. Then the number of students which the instructor can handle will increase, the drudgery of teaching will disappear, and the college graduate will be better educated. This sounds simple, and indeed this consummation is one devoutly to be wished. The suggestion by President Taylor of Sarah Lawrence College that there is nothing sacred about the ratio of the number of class meetings per week to the number of credits in a course is along the same line. Perhaps we can reduce the number of class meetings of a three-credit course to twice a week.

But these arguments seem to run counter to the kind of evidence that one collects from many teachers and students. Most opinion polls seem to favor small classes. Judgments of students and teachers in favor of small classes may, of course, be affected by long habit and the desire to continue a method that has been pleasant and successful. On the other hand, the harassed administrator may too readily see in the large class a way of solving staff and budget problems.

What is the evidence as to the relative effectiveness of large and small classes? Studies, particularly those dealing with higher education, are few and the evidence is inconclusive. It is possible to argue from this limited evidence that large classes are at least as effective as the smaller ones. At least we must admit that with respect to many educational outcomes the burden of proof rests with those who contend that small classes are better.

But little has been done to determine whether the less tangible, harder-to-measure objectives of education are better achieved in small or larger classes. Personally, lacking experimental evidence, I should hesitate to throw out the results of opinion polls. Students and teachers who favor small classes are basing their judgments, I believe, on empirical data along the following lines: In the small class individual differences are better satisfied. The student comes out of a class where there has been considerable interaction between students and teacher with a better self-concept and a more wholesome attitude toward his problems. The inspiration to emulation of a great and noble teacher may be rare in any case, but it is not quite so infrequent an experience on the part of students who know the teacher intimately.

If this analysis is correct, information and ideas of many kinds can be communicated effectively by a good lecturer to classes of great size, running into the hundreds. The large-class method may be effective in developing greater responsibility on the part of the student for his own learning. It may even be useful, to a degree, in developing the powers of critical thinking. But as we presently think of the conduct of a large class, it may be difficult to meet the differing needs of the various members.

The development of ability to express oneself well and of skill in methods of study and research would seem difficult to achieve in large classes. But most of all, the processes which involve emotional concomitants—the development of attitudes which may color all of life—seem to be affected most in more intimate situations. I am reminded here that the greatest teacher of all did His most effective work with a small group of disciples and that even He seemed to have had only a limited success when He addressed the multitudes.

As college enrollments mount, I anticipate that we will be taking several kinds of action: (1) We will redouble our efforts to procure funds. In this effort, the influence of the noneducator, the man-in-the-street, will be tremendously

important—may indeed be decisive. (2) We will both erect more school buildings and utilize more effectively those we now have by means of longer school days and weeks and better scheduling; but the construction of more buildings is an obvious need which will often come ahead of staff needs. (3) We will employ more teaching personnel. Here we will be limited not only by funds, but by the availability of able, experienced, and adequately prepared people. More people will be induced to prepare for college teaching. Some able people will be continued beyond normal retirement age; homemakers who have left the profession for marriage will be lured back. Yet there will not be enough. (4) We will bend every effort to get the really competent teacher in contact with students in two ways; we must enlarge his audience. This can be done by increasing the size of lecture sections, provided the room and sound facilities are good, by reducing the number of class meetings and substituting more independent student work using library and other tools, and by the use of television. The second way in which the competent teacher must be brought into contact with larger numbers of students is more difficult to achieve. We must arrange for him to be free to have the crucial person-to-person relationships. I believe that this is possible through the assignment of his usual administrative duties to others, by securing competent semi-professional assistants for the more routine aspects of the teacher's job—reading papers, determining grades, checking bibliographies, running down information, scheduling appointments. Student assistants can be used in this way. Of course there is a limit to how much, even of such work, can be delegated and to the time that can be saved. It seems inevitable, in spite of all, that some of the instruction will be given by less competent people and that intimate contact of students with the ablest teachers will be reduced.

We must give attention finally to the question of methods of increasing teacher supply. Tremendously important as are engineers, chemists, physicists, doctors, social workers, diplomats, and others who are the products of our institutions of higher education, if we supply the demands in these fields before we supply the teachers who give them their education, we cut off our future supply of specialized talent for all vocations. The colleges and universities must be supplied first and best. This means funds—funds from the legislatures, from those who are in positions to know and to supply the needs of institutions, public and private. It means a job of public relations, selling the people with potential teaching ability on college teaching as a career. It means discovering the people with the qualities which make them potentially good teachers and performing with them something of a missionary task.

Teachers' salaries can and must be improved, but efforts to increase salaries will not in themselves solve this problem. Not only is it unlikely that educational institutions will ever be able to compete with business and industry with respect to salary levels, but such a development would not produce the desired results. If education were to secure its personnel on this basis, it might conceivably gain in brains but it might well lose its soul. This sounds trite, I know, and somewhat stuffy, but I believe this risk is real. The great power of education lies less in the ability of teachers to communicate knowledge, their ability to develop skills and methods of attack on problems of all kinds, effective and creative thinking—tremendously important as these things are—than in the ability to create a sense of dedication to something great and good, to something outside and beyond the in-

dividual. All the great teachers I have known in all kinds of institutions—public and private, large and small—have had this quality. I do not mean that adequate or even munificent salaries would necessarily have corrupted them, but I fear the consequences to education if the recruiting of new teachers is ultimately based on the fact that his is among the most remunerative of all occupations.

Let me conclude by saying that the students who come to college during the period of the great enrollment bulge will not receive an inferior education if we are successful in accomplishing certain things, but the "ifs" are important. They include securing a fair share of the national income for education, attracting a fair share of able, honest, courageous, and dedicated people into teaching, using the less well-trained and less competent instructional personnel in tasks for which they are qualified, and utilizing a variety of methods of teaching which will place more responsibility of learning on the student at the same time that it gets him on occasion into direct and intimate contact with great teachers. It may even be that the self-examination that colleges will be forced to engage in will improve their programs in unexpected ways.

In world affairs, as in other concerns of mature men, the conscientious citizen seeks and receives assistance in learning how to act effectively. He has available a greater wealth of information than did any of his ancestors. The knowledge of the specialists and the wisdom of the generalist are provided in profusion. Every day the mass media present vast accumulations of facts and opinions. Thousands of agencies and associations compete for attention. Some of them are openly biased, and others strive for objectivity. The basic institutions of adult education, such as the libraries, the evening schools, and all the various forms of university extension include the understanding of world affairs as one among their many objectives. Anyone who wishes to learn has ample opportunity to do so. His chief problem is likely to be that of selecting what he can use from the great variety of resources available.

Those who provide these resources have their own problems of both ends and means. As the instruments of information and education have grown in size and multiplied in number and diversity, their administrators have found it necessary constantly to re-examine their fundamental premises and processes. What are appropriate goals, and what methods should be used to achieve them? What is actually being accomplished in a field in which measurement of results is usually general and always difficult? What part should education about world affairs play in the total program of agencies that provide general services? These questions are raised more or less specifically and answered more or less rationally by those who administer every agency of organized communication to mature Americans.—From *The University, The Citizen, and World Affairs* by Cyril O. Houle and Charles A. Nelson, published by American Council on Education, 1956.

Some Observations on the Education of Gifted Students

HAROLD W. STOKE

THE BEST reason why gifted people should be educated is that this is the most appropriate use which can be made of good minds. Under present circumstances, there is the additional reason that the country needs to discover and develop all the superior talent it has. However, the determination of who are the gifted people about whom we should be concerned, and what we should do about them, is not an easy matter to decide.

Discussions about the gifted student usually center on two focal points. The first is how to discover him, whether within or outside the school; the second is how to treat him after he has been discovered. Interest in the first point arises from the worry that there are many gifted students who never get to college, and that something should be done about it. Of course, a great deal *is* being done about it, and the more that is done, the less simple the matter appears to be.

The second problem is what the colleges and universities can do with the superior student when he is in school, assuming that he has been discovered. In even more refined terms, the problem is what can the classroom teacher do as a person presumably having special responsibilities. I use the term "superior" student deliberately as a synonym for "gifted" because I think the schools cannot bother with the discovery and cultivation of "genius." Genius is too rare, too mysterious, and too unmanageable for a school system to adapt itself to, even if it knew how. I am also ignoring that special kind of "one-sidedness" which is sometimes regarded as the mark of the gifted—a talent for music, mathematics, or art so absorbing as to exclude interest or accomplishment in anything else.

The problem of the school is how to do something for that student who does the same kind of work as his fellow students but does it faster, more accurately, in larger volume, or better than they. What can be done so that his capacities may be fully involved and more fully developed?

The biggest drawback to doing anything for him is to be found in the social environment of which he is a part. To distinguish him on intellectual grounds from his fellows is socially dangerous. I am not at all prepared to say it is wise. Intellectual distinction is but one form of social value and I cannot say how much should be paid for it. In other words the democratic concepts of our society place serious limitations upon deliberate and systematic cultivation of intellectual distinction whether in the grades or at the college level. What can be done will have to be done within the freedoms of a generally accepted plan of organization.

It is this social limitation which restricts the use of the most obvious suggestion for the cultivation of intellectual distinction, namely separation or segregation on the basis of superiority. While some separation may be permissible as between those who are "good" in English or mathematics and the "dumbbells," it is not feasible except on specific subject-matter tests. No school dare classify its students (or would really find it feasible to do so) on the basis of general ability.

Segregation by ability is accomplished best by the admission policies of institutions—in which, let us say, Haverford or Reed may have a much higher percentage of "bright" students than, say, Louisiana State or Pennsylvania, but I have always doubted that there was much choice in educational results between the bright student in the heterogeneous atmosphere and the bright student in the selective one. It depends, I think, upon the point in life's cross-country race at which one applies the tests and upon the tests one applies. At any rate both as a matter of social implication and of management the separation of the gifted student is not feasible in our present school system.

The most important thing that can be done for the gifted student is what the conscientious teacher has always done for him, namely give him special opportunities or impose upon him special demands to improve his gifts. If the student has interests, encourage them; if he shows special talents, spend time in sharpening them. Make sure his time is occupied, that reading and writing are required or encouraged in larger amounts. Let him follow a bent wherever possible, develop self-direction. These things, of course, are the normal duty and desire of teachers. Perhaps they must be mentioned again only because it is so difficult to do these things for students when their numbers are so great and teachers are so driven by the demands of their own classrooms, environment, and profession.

Perhaps the best thing we can do for gifted students is to "keep out of their way." This is not said facetiously; it is meant in all seriousness. I sometimes think that, institutionally, we are in a conspiracy to prevent the emergence of genuine distinction. The rigidity and number of requirements for degrees, the inflexibility of transfer work between schools and departments, the demand that things be studied in formalized sequence, are major repressions to spontaneity and to superior work. All of us can cite the horrible example that "you can't take Course 100 until you've had Course 99, and we don't care if you did take the course somewhere else, you'll have to take it here." No matter how one rationalizes it, the stumbling blocks of institutional management are major barriers to individual student treatment. And yet within even these limitations there are many things which the teacher and even more the student can do to make any college career distinctively rich if they wish to do so.

There are other limitations that get in the way of the gifted student which if removed would enable him to make more of his opportunities. One of these is the question of financial support. As between the student who must divert time and energy to unacademic employment and the student of equal talent who is free to devote himself to his studies, the latter has a great advantage. One cannot drive a taxi and read a book at the same time.

A second limitation is a kind of climate in American institutions which is simply not favorable to the exaltation of intellectual accomplishments. Acting upon the widespread point of view that everything students engage in is of equal educational importance, or at least is educationally as important as the pursuit of learning, is one way in which we have succeeded in getting in the way of students and of the teachers as well. I shall not worry too much about the shortcomings of the classroom teacher so long as we deliberately encourage the profusion of student activities and distractions which subtract from the time of both students and teachers who never have enough for their intellectual tasks. The greatest teacher in the world cannot teach unless he can get attention.

I am inclined to take a more com-

placent view than most—perhaps too complacent—about the problem of gifted or superior people. By definition, gifted people are such only by virtue of emerging in the environment in which they live, and as measured by the talents which we require of them. On the frontier the strong man with an axe was the gifted person whose talents protected and preserved the community—not the man of words. The best school then was that which produced the best muscle. In our day the demands are different, and so are the tests of superiority. To put it bluntly I am not at all sure that the person who needs help to prove he is gifted is so gifted after all. As Cardinal Newman put it: "No matter how much a faculty can do for a student it is as nothing compared to what he can do for himself." This, it seems to me, is the real clue to the special treatment of the gifted student, namely, to remove the barriers and to give him the greatest possible opportunity to help himself. Actually I think that the American situation is about as free from artificial and irrelevant restraints upon the individual's impulse and capacity to acquire education as any system we know—free from social caste, economic limitations, religious and racial conditions, and even previous educational experience—and it is, in most respects, becoming even more so. After we have created the maximum conditions of freedom, it is my own belief that we do all we should —indeed all we really can—when we leave the rest up to the students.

One of the most important unsolved problems in the relation of higher education to its public is the lack of machinery to give the American people a comprehensive, objective, multiple-dimensional view of their colleges and universities, and to do so repeatedly and continuously.

In many ways higher education today is in transition. In enrollment prospect, the population curve is at a low point before the predicted sharp ascent in the decade beginning in 1960. The vital relationship between the talents and abilities of college-trained people and the prosperity and security of a nation is only beginning to be broadly understood. The tremendous needs of educational institutions are collectively just now becoming clearly defined; and the waste of precious human talent not now brought to maximum usefulness has become a national concern.

It is a continuing task in interpretation to make clear that citizens must not take the narrow view that the welfare of universities and colleges is of concern to them only when their children are enrolled, or when the supply of trained personnel for their business is affected. The welfare, quality, integrity, and achievement of higher education are part of the heritage which we must hold for all of those who in the future will have need for its services.—"Higher Education and the American Public" by David D. Henry, in *Higher Education and the Society It Serves*, published by American Council on Education, spring 1957.

Widening Horizons

HERMAN B WELLS

THE AMERICAN college and university, in contrast to universities in most other societies, traditionally has accepted responsibilities beyond the immediate confines of seminar, lecture hall, and campus. Throughout their history, American colleges and universities have deemed it their responsibility to render useful and dedicated service to the welfare of community, state, and nation. While our colleges and universities have pursued with diligence the traditional university functions of teaching and research, they have likewise placed their rich resources at the disposal of local, state, and national government, of commerce and industry, and of professional and civic leadership in an attempt to serve, thereby, better and more completely the welfare of all the people. In this spirit, especially since World War II, trustees, college administrators, and faculties now have accepted new and challenging responsibilities reaching far beyond the political frontiers of the United States and encircling, in fact, the entire globe.

This expansion of responsibility beyond national boundaries to ever widening horizons has been the inevitable result of national and international political, economic, and technological developments. As our nation has emerged from traditional isolationism, our colleges and universities have expanded their curriculums and their general academic interests to meet the new demands of society. Our good neighbor policy of the late 1930's and the early '40's, the widespread struggle of World War II, postwar economic problems of Western Europe, and the emergence of the Soviet Union as an aggressive giant of world power have turned the eyes of America to other lands; in this process our institutions of higher learning have become ever more conscious of the problems of other nations, all of which in some manner and measure now are our neighbors.

As we have come to look at the world around us, and as we have experienced war and threat of war in the once far-away lands of the Far East, Southeast Asia, South Asia, the Middle East, and Africa, we have come to recognize the inadequacy of our curriculum, steeped in and largely confined to Western tradition, and the limitations of our knowledge, parochial in the sense of its confinement to the culture of the Western Hemisphere and of Europe west of the Ural Mountains.

With this recognition of our inadequacies has come the realization that a new orientation and new knowledge had to be acquired, and had to be acquired speedily and efficiently. We could not again be content with the slow, though proven, processes which have given us Americans knowledge and appreciation of our Western European heritage. Ways to accelerate these processes had to be found. In this quest for knowledge and better understanding of the lives and thoughts of the remaining four-fifths of mankind, we have encouraged exchanges of students, professional and political leaders, of books, magazines, films, and newspapers; we have sought many other means. The most recent and perhaps the most imaginative device helping to complete our knowledge and understanding and to cement this world into one is the so-called Overseas Contract Program. American colleges and universities have welcomed the oppor-

tunities offered by these contracts with universities of foreign lands, under the financial sponsorship of their own governments and our International Cooperation Administration. They appreciate the opportunity to learn firsthand of the ways of thought, manner of living, history, geography, aspirations, and ideals of other peoples.

These contracts, of which there now are 83 with 38 countries on 53 American college and university campuses, have given us an extraordinary mechanism by which we can quickly grasp what otherwise might take us centuries to learn. They have encouraged us to stretch our intellectual muscles, to expand and modernize our curriculums, to enrich the experience of our faculties, and to enliven our university communities. The foreign statesmen and scholars whom they have brought to our campus —the alert, young intelligentsia of hitherto little-known lands—have given a new vitality and new richness to our university environments. Members of our own university faculties, teachers, research men, and graduate students have sparked the imagination of their colleagues on their return from periods of residence overseas. A new spirit has penetrated our campuses bringing with it unparalleled opportunities for novel areas of research and better comprehension of the problems of our world.

It is small wonder, therefore, that we ourselves stand to benefit from the operation of these contracts at least as much as, if not more than, the people of the lands to whom we bring specialized knowledge and technical know-how. It is small wonder that we are ready on our campuses to give much attention and some sacrifice to a program from which we benefit so richly and importantly.

If the high potential of the Contract Program, however, is to be fulfilled, it is necessary that certain attitudes be encouraged and maintained on the part of the governments and the universities. There are, of course, many attitudes involved, but for the purposes of our discussion, I should like to single out five which seem to me particularly significant. Three of these are attitudes which in my opinion are required of the universities and two are attitudes desirable on the part of government if the program is to continue to enjoy success.

The first attitude is implicit in the very philosophy of the entire program. I believe it is of the greatest importance that participating colleges and universities regard these contracts as an *educational opportunity* in addition to an opportunity for public service.

There is no question that participation by an American college or university in a technical assistance contract represents a useful and highly desirable public service. Most of these contracts are designed to improve the standard of living, political stability, and social progress of the less-developed countries of the world. These nations have become ever more important to the maintenance of the balance of peace and thereby to our own national welfare. The American people have had much reason to be grateful to the institutions of higher learning. Through this most recent manifestation of their public spiritedness and readiness to serve the common good, these institutions have further expanded their area of service to the national objectives of our country.

Nevertheless, as important as is the public service aspect of the Contract Program to our colleges and universities and to the nation as a whole, of fully equal significance, in my judgment, is the *educational* enrichment which these contracts give to our academic communities and to which I have referred before. This *educational* contribution would in itself be justification for the time and effort which the program requires on the part of faculty who have the immediate

responsibility for directing it, of deans and general educational administrators, and of boards of trustees and regents.

The *educational* advantages to the *American* institutions in many cases would be enhanced if the Contract Program could be expanded more broadly into the humanities and social sciences. In these fields of scholarship, perhaps more than in any other, the fertilization of thought which springs from the close working partnership with a foreign institution yields particularly desirable results of educational advantage to the American college community.

Parenthetically, I should like to make one additional observation. Greater emphasis in the Contract Program in the humanities, social sciences, and fundamental, pure sciences would be useful for another reason. We all know that the applied sciences and technology in general flourish best when the pure and natural sciences, humanities, and social sciences are strong and vigorous. This is as true abroad as it is at home. Furthermore, in giving exclusive support to the development of applied sciences in certain overseas institutions, we may contribute occasionally to the imbalance of the institution's program to such an extent that it loses rather than gains in its effort to become strong and stable. Finally, because of the high degree of development which these areas of scholarship have enjoyed in the United States, their inclusion in the program may be of especially great benefit to the foreign institution.

To return now to the original topic, I come to the second important attitude of the American colleges toward the Contract Program. Success requires the attention and concern of every segment of the university community. An overseas contract, although obviously centered for purposes of day-to-day administration in one department or school, is not the responsibility exclusively of the school of agriculture or education or of the department of home economics or political science. It is the responsibility of the entire university, from board of trustees and president through the ranks to the teaching fellow. Only if the institution regards the Contract Program in this light of over-all responsibility can the first attitude which I mentioned, and which is so essential for its success and justification, be attained. In fact we have observed in our own community that the successful execution of a contract with a foreign university to some extent is the responsibility of "town" as well as of "gown." The men and women who are brought to our American campuses under the Contract Program form their views of America as much through their off-campus experiences as they do in lecture hall and library. In this joint responsibility of campus and community, of departmental units and central administration, lies another exciting challenge of the venture.

Finally, a third attitude which is desirable on the part of the American institution toward the foreign institution is the willingness to recognize the contract as a cooperative venture between two equals. Unless the contract operates in an atmosphere of sincere partnership the American university may be caught in the pitfall of paternalism; and the foreign university may come to consider the American institution as a bureaucratic arm of central United States Government, thereby defeating an important purpose of the program. On the other hand, equality of status, sincerely recognized and observed in all relationships, insures mutual respect and confidence and thus encourages the achievement of the contract goals.

I now wish to mention two attitudes desirable on the part of government.

The United States Government is engaged in partnership with the nation's leading centers of thought and profes-

sional achievement. These institutions, by long tradition, are accustomed to responsible action in freedom and independence. Perhaps more than any other social agency, our colleges and universities are conscious of their freedom and independence and are determined to preserve them. I am sure that there is no college or university of high standing in this country which would not first sacrifice the extension of its service opportunities through these contracts rather than sacrifice the sacred tradition of sovereignty in thought and professional decisions.

Furthermore, our colleges and universities are organized so that those responsible for their affairs are accountable to groups and professional bodies best qualified to judge their performance. If the potentials of the Contract Program are to be attained, it is essential that government recognize the traditions of our institutions of higher learning and allow these institutions freedom of decision in all those professional and technical aspects of the contracts in which these institutions are best qualified to make them. This requirement, of course, does not deny that there are broad national foreign policy objectives within which the universities must operate.

Such an attitude of the United States Government is essential not only to preserve its harmonious relationships with the American institutions but is advisable also from the point of view of institutional relationships with the foreign universities and *their* governments. In many of the countries where these contracts operate, universities enjoy much less autonomy and freedom than here. Enlightened university administrators and faculties abroad believe, as we do, that the independence and freedom of the universities is essential to the healthy intellectual life of their country and thereby to prosperity and national political, economic, and social progress. If in our relations under the Contract Program with foreign universities we can give a practical demonstration of the reality of autonomy of American institutions of higher learning, we will thereby give example and encouragement to our colleagues abroad, further strengthening their cause and making an indirect yet valuable contribution to the purpose of our contracts.

A second attitude which I should like to encourage on the part of government is a clear recognition that individual contracts and the program as a whole require a substantial amount of time for fulfillment. We all know that educational projects invariably are long-term projects. If the contracts are to be regarded in terms of their educational value, the program must be given stability and assurance of long-term policy support. College and university administrators, some opinions to the contrary notwithstanding, are reasonable men! *We* know as well as anyone that non-appropriated funds cannot be committed. But it is possible, however, to give a measure of stability to the program through assurance of long-term *policy* support, apart from annual financial appropriations.

I am certain that with a clear recognition of both the foreign policy objectives and the immense educational significance of these programs for American and foreign institutions, succeeding Congresses will continue to back them financially with adequate appropriations.

With the attainment of these attitudes on the part of American universities and the United States Government, I am confident that the full potential of the Contract Program can be achieved. I am certain, in fact, that hitherto undreamed-of working relationships may develop between American institutions and foreign institutions, personal relationships between American and foreign scholars, American and foreign students—rela-

tionships which will be sound and lasting because they will be built on the solid foundation of joint work of equal partners on behalf of a common objective. From these contracts will grow ties in areas of thought and professional activity outside those which had their beginnings in government initiative. The Contract Program thus can become an effective point of departure for meeting in a very real sense the aims set by President Eisenhower in his speech at Baylor University calling for renewed efforts on the part of individuals and nongovernmental organizations in international relations.

Perhaps I feel as I do about the great educational value of the Contract Program by reason of our experience at Indiana University. Our experience, I am sure, can be duplicated on many other campuses.

Indiana University is a Midwestern institution. Mr. Bernard DeVoto once wrote that

> The Middle West is the great body of the Republic but it must find its way to Europe by New York, to South America and Africa by New Orleans, and to Asia by San Francisco. It is so deep in the vastness of the American continent that it cannot believe in the existence of salt water. Still less does it believe that beyond the oceans there are other peoples or that what happens to such peoples in any way affects what happens to the Middle West. It knows the marginal borders of its own province, the States east of the Alleghenies and west of the Rockies; for they also belong to its political system. But its awareness stops there, somewhere inland from tidemark. In its own province it lives an intense local life, remarkably integrated, absorbing, so rich that it instinctively judges all other variants of American life to be less substantial. If the rest of America is insubstantial, Europe and Asia and Africa are phantoms or perhaps rumors. The Middle West is indifferent to them, even skeptical. Like blizzards and droughts, foreign nations and foreign wars are temporary and peripheral.

Although this was written during World War II and much has happened since, still these sentences clearly mirror the preoccupation of my part of the country with local concerns.

Within a period of two years Indiana University has entered into contracts to help with the development of teacher training and training for public administration in Thailand. Before that time Hoosier lack of knowledge of Thailand was equaled only by Hoosier lack of desire to learn. In due course, however, there came to our campus a stream of visitors from the ancient and beautiful land of Siam, bringing to us their own personal interpretation of their country's music, art, culture, and history. Now two years later thousands of our students have learned a great deal about Thailand and have an intense interest in the progress and destiny of that faraway corner of the globe. Members of the faculty, broadened in knowledge and clearer in understandings, have returned to the campus from service in Thailand, thus enriching the university's educational resources. Others have found new research interests, stimulated by the opportunities and responsibilities of our cooperative enterprises in Thailand. Beyond the campus, through speaking contacts, conferences, newspaper articles, broadcasts, television programs, and so on, tens of thousands of Hoosier citizens now have an increased awareness of the Orient and its economic and diplomatic significance.

In the depth of the Hoosier hinterland I have watched horizons widen. Thus I know that these university contracts offer Americans new perspectives and enlarged vistas of understanding, and political maturity so vitally needed in the solution of the problems of today's chaotic world.

The College Graduate in Industry

J. WHITNEY BUNTING

DURING THE month of June every year, a great wealth of material is provided on high school graduation platforms by speakers from every conceivable walk of life. Very often, the remarks are directed to the general theme of what subject areas studied in college will provide the greatest promise for business success, both in terms of position and in terms of financial reward. There is little doubt but that such information is needed and has a real place in the planning of academic programs at the college or university level. Unfortunately, however, such remarks are often forgotten shortly after the ceremony ends because they are not supported with any concrete data or research experience.

American industry, both large and small, is vitally interested in unearthing such data as an aid for recruiting, to provide a basis for postcollege on-the-job training programs, and to promote a better productivity by coordinating educational experiences with company personnel needs. Yet few industries have directed their research efforts in this direction.

The Educational Relations Services Department of General Electric has long had an active interest in discovering those collegiate factors, both academic and extracurricular, that contribute most to a person's success in business. To develop this information, a survey was undertaken among company employees holding degrees from accredited colleges and universities. In this study, they were requested to reflect upon their own educational experiences and, by this process, draw conclusions that might have long-term value to educators, students, prospective students, and to the company in more closely relating the Educational Relations Program to the corporate values received from collegiate training of employees.

The General Electric Company offered an excellent laboratory for this study because, as of the date of this survey (October 1955), more than 24,000 college graduates with a wide variety of degree experiences were employed by the company in positions of management or professional responsibility. In order to reach the greatest possible number of these graduates, a questionnaire form was devised and forwarded to each graduate with appropriate information for completion and return. Where it seemed beneficial, graduates were requested to comment as extensively as necessary in order to ensure that no misinterpretation of tabulated data might develop.

Enthusiastic responses soon poured in, and when the tabulation was begun, more than 13,500 replies had been received (53 percent from engineers and 47 percent from nonengineers). Evidence of the interest in the questions covered by the survey was proven by the fact that many respondents attached multipage letters to the questionnaire form to explain more adequately their comments concerning courses, activities, or the financing of higher education. Such comments were very enlightening, although they posed a mechanical problem in the analysis and interpretation of the survey results.

One of the most illuminating results of the survey was the interest of respondents in the value of work in the field of English. Although the importance of good communication techniques has been receiving widespread attention

in many quarters, the emphasis placed upon the study of composition and speech was amazing. Nonengineering graduates indicated that courses in English communication were most important for career development in business or industry. Engineers rated such study second only to mathematics. (The latter is often considered to be an important communication tool in itself.) Surprisingly enough, there appeared to be a considerable degree of unanimity among both groups as to the other most valuable study programs. Definite support for physics, economics, and mathematics was registered as courses of real importance for business success. Bare statistical tabulations fail to represent the overwhelming feeling that respondents had favoring the value of a broad educational background as a prime factor in the successful administration of the business enterprise.

RANKING OF COURSES REPORTED MOST VALUABLE TO CAREER

Engineering Graduates	*Nonengineering Graduates*
1. Mathematics	1. English
2. English	2. Economics
3. Engineering	3. General business
4. Physics	4. Mathematics
5. Economics	5. Psychology

The response to a question searching for the least valuable (career) courses was not nearly as definitive. Many respondents were forced to preface their statements with the general theme that all courses provided a definite value in shaping their abilities to handle complex business problems. Moreover, since many of the courses listed as less valuable were only named because they were not presently in use, the conclusion should not be reached that such studies might well be eliminated from the curriculum. Those courses most frequently mentioned in the "least valuable to a business career" category included foreign languages, history (particularly ancient and European), miscellaneous sciences (generally botany, biology, zoology, and physiology), and some social sciences with particular reference to courses in government. It was indicated quite clearly that some of this reaction, particularly in reference to foreign language, resulted from uninspired teaching, a factor that caused definite antagonism to the course itself. On the other hand, few respondents who mentioned foreign language in this category considered the importance of such training in the development of a better command of English communication, nor did they appear to recognize the mental discipline provided by such study. In the same vein, many engineers reported specific engineering courses as "least valuable," but these were often engineering courses in fields other than the respondent's business specialty.

RANKING OF COURSES REPORTED LEAST VALUABLE TO CAREER

Engineering Graduates	*Nonengineering Graduates*
1. Foreign language	1. Foreign language
2. History	2. Miscellaneous sciences
3. Engineering	3. History
4. Economics	4. General business
5. Government	5. Accounting

Industry of today is paying more attention to leisure-time activities, both for managerial and nonmanagerial employees. This is explained in part by the very distinct relationship between on-the-job efficiency and productive creativity and the wholesome use of leisure time for recreation and personal improvement. The executive, for example, who has a sound program for leisure pursuits during his nonworking hours is apt to be a better manager and more able leader during the time spent at his office desk. Both engineers and nonengineers reported in the survey that their college courses in English literature had provided the greatest breadth of opportunity for a satisfying use of leisure time. Included in this category, of course, would be American literature

as well. The opportunity to relax with a good book seems not to have been reduced in value in the modern complex world.

Other courses of value for leisure-time pursuits included strong votes for history, economics, general science and technical subjects, physics, mathematics, and philosophy. An understanding of the world of yesterday as a basis for modern living was often mentioned as valuable for the complete enjoyment of leisure time. Several votes for modern foreign language were noted in the replies, and Latin even came in for mention. As might be expected, the liberal arts graduates tended to indicate a greater breadth of "value courses" in the humanities and social sciences.

RANKING OF COURSES REPORTED MOST VALUABLE FOR LEISURE TIME

Engineering Graduates	*Nonengineering Graduates*
1. English literature	1. English literature
2. Engineering	2. General business
3. History	3. History
4. Economics	4. Science and technical
5. Physics	5. Mathematics
	6. Humanities (general)

What subject-matter areas should be pursued in college by young people desirous of building careers of management responsibility in business or industry? This challenging question brought forth a wide variety of responses from the General Electric college-graduate group. However, when tabulations were completed, the degree of unanimity found among both engineers and nonengineers was most remarkable. Although there was frequent variation in suggested courses themselves, an almost equal emphasis was given to four major study areas (sciences, social sciences, humanities, and business). In fact, prospective college students were advised to take basic work in five subjects by both engineers and nonengineers. These suggested courses included English, science and engineering, mathematics, economics, and general business. The liberal arts group further emphasized the value of some foundation work in the areas of psychology and the humanities. Many written comments added to the weight of these suggestions and indicated that a broad educational background, replete with many and varied academic experiences, would be of inestimable value in preparation for a business leadership career.

COURSES MOST RECOMMENDED FOR MANAGEMENT RESPONSIBILITY

Engineering Graduates	*Nonengineering Graduates*
1. English	1. English
2. Engineering and science	2. Economics
3. Economics	3. General business
4. General business	4. Engineering and science
5. Mathematics	5. Mathematics

Concern is frequently expressed at whether or not extracurricular activities at the college level tend to increase a person's chance of career success. Although this study does not provide a conclusive answer to this question, it does show the degree of participation in such activities that General Electric college graduates enjoyed. Engineers indicated that they participated quite heavily in extracurricular activities, even more so than liberal arts graduates. The figures were 93.05 and 88.01 percent respectively. Those who did not participate generally were prevented by financial problems demanding a heavy outside work load, full-time employment causing attendance at night school, or early marriage and the concomitant responsibilities. Athletics, social groups, and professional associations were the most important types of outside activity enjoyed. As to the value of such pursuits in building a later life career, 70.94 percent of the engineers felt that certain benefits were realized as compared to 65.39 percent of the liberal arts graduates. Par-

ticular mention was made of activities such as officerships in both social fraternities and professional organizations.

Along with the well-defined belief that college training is now essential for a successful business career was also the belief that such education is an investment and should be so considered if a problem of financing should develop. Strength was given to this position by the background of most of the respondents. Approximately 90 percent earned some portion of their collegiate expenses; more than two-thirds of these earned at least half. Just over a quarter of those surveyed signified that they had received scholarship aid. With this personal background, the respondents were overwhelmingly in favor of students with financial problems earning their own way. Approximately one-fifth of the liberal arts graduates and one-third of the engineers suggested that such students might borrow the needed funds, but well over half of these replies suggested that borrowing be tempered with earning—with the borrowing kept to the barest minimum and the students earning as much as possible. Less than one-half of 1 percent suggested that the student should drop out of college, and most of those who suggested this course of action said it should be the last desperate resort. Such dropouts should only be long enough to earn sufficient funds to return to college.

The general satisfaction of most alumni with their alma maters is dramatically reported by the results of this study. Three-quarters of the liberal arts graduates would choose the same college if they had the opportunity of college choice again. Engineers were even more satisfied, with almost 85 percent indicating that the same choice would be made again.

On the other hand, greater dissatisfaction was evident with the course program selected by the nonengineering group. Only 54 percent of this group would choose the same course of study again, whereas three-quarters of the engineers would follow substantially the same program previously pursued. It was apparent that dissatisfaction with the college selected arose primarily because of the impact of financial considerations in the selection process. Those who attended evening programs or colleges near home for living-cost reasons would probably not make the same choice if such could be avoided. Often this was not because of poor standards or because of any visible defect of the institution but rather because of the limited variety of academic experiences encountered in an atmosphere too near home or restricted by the burdens of financial hardship. Some indication was received, not conclusively however, that a college away from home offered greater benefit than did a local institution.

One question that provided much trouble for the respondents dealt with the long-term influences of teaching personalities versus subject matter. Most persons found this one difficult to answer, for in many cases the passing years had brought the two influences together. Some graduates remembered their *favorite* professors well but, even so, felt that the subject matter taught had perhaps a slightly greater influence. Certain comments noted that anecdotes or examples offered by professors were well remembered, but otherwise, the course data were of greater lasting influence. When tabulated, the results were approximately equal with a 2 percent edge favoring the long-term value of subject matter over teaching personality.

In conclusion, two points that respondents raised repeatedly deserve mention. First, there appeared to be a widespread conviction, based upon solid personal experiences in the business world, that a broad, general educational program is becoming essential to success today. Just

what specific courses are included in the broad program are not spelled out with the same degree of clarity. However, as reported earlier, the modern educated man does need to have a basic understanding in all the major fields of study (science, humanities, social sciences, and business) if he is to compete for success in today's society. Even more, he must have a solid background of human understanding to enable him to live a fuller and richer life both on and off the job. Perhaps it is significant that specific courses could not be outlined in too much detail, for outside of broad generalizations of study areas, the individual himself must recognize which specific courses have been of greatest assistance to him.

Respondents, moreover, indicate a definite need for greater and better guidance at all educational levels. Many are now in varying stages of parenthood with children in all segments of the educational world. Yet time and time again, comments indicated that the complexities of modern education (along with modern life) provide ample opportunity for trained guidance counselors who may aid in plotting the direction of an individual's personal program. This was not a plea for a stereotyped course or program of studies. Rather, it was a belief that the individual, in concert with a trained adviser, might better plan a personal program and thus avoid the pitfalls and lost time of a program not suited to his needs or capabilities.

A final word lest this study and its objectives be misinterpreted. The Educational Research Section of the General Electric Company does not offer this report with the thought that it will change curricula in the colleges and universities of the nation. Nor does this section of the company believe that its function is to exercise any control over academic programs, either directly or indirectly. It is offered only with the belief that educational leaders may find, through the testimonials of more than 13,000 college graduates, some seeds of information that may allow the colleges and universities to develop courses and programs that will aid in better educating the young men and women of the United States for life in the more complex world of tomorrow.

A Faculty Sets Its Sights

HENRY F. POMMER

In April of 1956 the following three paragraphs headed an editorial in *The Campus*, the student-edited newspaper of Allegheny College:

> Admittedly we were not surprised by the perceptibility and sensitivity displayed in the Instruction Committee report on the improvement of Allegheny teaching printed in last week's *Campus*. . . . We assumed the report would be a stimulating one, but our high expectations were greatly exceeded.
>
> The faculty's frankness commands our deepest respect. Few college faculties in the nation would so freely distribute such a penetrating self-analysis to their students. This open-mindedness reaffirms our faith in an Allegheny education, for here teacher and student meet on the path to a common goal.
>
> We concur with the Committee's disturbance at submarginal courses and hope that Allegheny's instruction will demand the most from us. We look forward to the day when Allegheny can boast that it offers no "bargains" in education, the day when those who look for an easy avenue to a diploma will know better than to waste their time and the teachers' at Allegheny.

The report which aroused so much enthusiasm from the undergraduate editor may interest teachers and administrators elsewhere. It found part of its origin in a grant made to Allegheny by the Fund for the Advancement of Education for an evaluation of the educational program of the college. This study was conducted by means of a Senior Seminar, the teachers of which released their findings in the spring of 1955. The rest of the story is told in the report itself, reproduced here in the form which was unanimously approved by the college faculty.

Report of the Committee on Instruction

On October 28, 1955, the faculty voted "that the President . . . appoint a . . . committee to study the findings of the teachers of the Senior Seminar and to report the results from time to time to the faculty. The aim is to apply the insights gained through the Senior Seminar to the total academic situation rather than to evaluate the Senior Seminar." Several weeks later the President asked the Instruction Committee to make the desired study. We have done so, excluding from our attention whatever the admissions officers, student personnel staff, or other administrators might do to improve "the total academic situation." We have not tried to describe the learning and personality of an ideal teacher. Finally, we have excluded possibilities of adding or dropping courses or requirements. Our focus has been on what the individual teacher can do in his present courses to improve his own teaching.

In exploring this area, we have on the one hand made no attempt to define an essence of good teaching, or to outline procedures which all teachers should use. We recognize that good teaching is a richly varying process, affected in its forms by many factors, such as the kind of student, the size of class, the type of subject, and the personality of the instructor. Our maximum effectiveness will come from each teacher's examining his own teaching in the light of this report, and taking from it whatever is useful for him.

On the other hand, we recognize both that administrators must from time to time try to measure each teacher's effectiveness, and that newcomers to our faculty are entitled to as specific a statement of our standards as is possible. In particular, instructors without previous experience might benefit from such a statement. Our statement is, therefore, offered to the faculty for discussion and amendment, and with these suggestions: (1) that it or some substitute statement be approved by the faculty as representing part of its concept of good teaching; (2) that the faculty recommend its statement to the administration for use as part of the process of identifying good teaching; (3) that copies of the faculty's statement be given to every person added to the instructional staff; and (4) that the faculty's statement be given to *The Campus* for publication in full.

The Senior Seminar has not brought to light any heretofore unknown weaknesses of our student body. It has, however, heightened our awareness of many of these weaknesses: inability to originate and test ideas, inability to write English which is both conventional in its mechanics and effective in its rhetoric, ignorance of contemporary social issues, naïve faith in the printed word, superficial understanding of values. Furthermore, the practices which we recommend have long been known and frequently employed. We must apologize for dealing so often with the obvious.

The direction our teaching should take was ably expressed in a report by the Seminar staff:

> What seems to be needed is a greater student involvement in the learning process. Too many students look on faculty merely as sources of facts and "right" answers on questions of interpretation. This student attitude must somehow be reshaped.

One solution seems to lie in increasing the quantity of work demanded in some courses, and in increasing the quality of work demanded in most. It will not be sufficient to avoid the sarcasm and rigidity which discourage student imagination and reflection. We must take positive steps to encourage creative mental activity in all subjects to show that both teachers and students can derive pleasure from the never-ending opportunities of learning. The steps which we mention below are only a minimum.

1. *The broad but immediate context of the course*

Every student's learning can be stimulated by helping him to identify himself with the instructor and with the contents and aims of the course. Each aspect of this report has some bearing on such identification, but direct attention to the problem is also necessary. The teacher should assess the total facilities of the college community in order to find ways of linking his course to numerous aspects of the student's life. A few typical links are these:

a. Using in-class and out-of-class speakers provided by the Public Events Committee, the College Union, the city, or other sources.

b. Mentioning the vocational value of courses or majors (sometimes by listing jobs held by recent graduates of a department).

c. Demonstrating in and out of G-courses [General Education courses] their widespread relevance.

d. Urging the value of certain Playshop, radio, and TV productions as supplements to class work.

e. Choosing illustrations for lectures and discussions from the student's past experiences and everyday life.

f. Referring to current events of the campus and of the municipal, national, and world scenes.

g. Using case studies to illustrate general principles.

h. Getting acquainted with students as individuals, and encouraging students

to get acquainted with faculty members. (Such knowledge need not be a threat to impartiality in grading.)

2. *Lectures*

On the one hand, a lecturer should recognize that some classes know nothing about his subject and that he must begin with very simple information or problems. He may have to devote valuable minutes or hours to explaining necessary skills such as elementary mathematics, or how to study and take notes. On the other hand, he should not repeat material covered in textbooks or readily available in the library. Instead of such "spoon-feeding," lecturers should present additional illustrations, fresh issues, unsolved problems, or their own creative thought. Some time can profitably be spent in pointing out errors or oversimplifications in the text in order to encourage a more critical attitude towards the printed word.

Blackboards can be used effectively for presenting names, words, dates, and data not occurring in the texts. If the instructor examines and criticizes students' notebooks he can help students see what they should be getting from classes and readings. He may also learn how lectures and discussions can be improved.

3. *Papers*

a. Quantity

Essays should be demanded of most students by most instructors. Teachers of manual and vocal skills are, of course, an exception, but the rest of us should spend a generous amount of time in assigning and grading student writing—in part, essay examinations (see point 4); in part, essays written outside of class. The report of the examining committee of the Middle States Association commented (p. 13) on the small amount of writing demanded of Allegheny students.

b. Quality

It seems probable that if all instructors demanded a higher level of performance on written work, better papers would be given to us to read. That higher level might be encouraged negatively if papers deficient in material, organization, grammar, rhetoric, or footnoting were

1) refused credit until rewritten;
2) reduced sharply in grade, with indication of the reasons for the grade.

In addition, the writing of short papers on large topics should be discouraged because of the superficiality that usually results.

A higher level of performance might be encouraged positively in several ways. Class time can profitably be spent in reading and analyzing examples of good student writing. Class time and private conferences can be used in helping students to see clearly the nature of assigned topics and the processes of original synthesis (see point 8). The student ought to be shown repeatedly the value of using the printed page as a source of ideas and of stimulation, not as a source of words and sentences. Emphasis on good practices must, here as elsewhere, be continued with each college generation long enough to extinguish old and undesirable student habits and then to establish new and desirable ones.

Each department should consider how much supervision should be given to senior projects, and of what type—group conferences, individual conferences, a mimeographed sheet of instructions, and so forth.

4. *Examinations*

Because valid generalizations can be based only on a broad knowledge of details (facts), comprehensiveness of information must receive strong emphasis

in testing. But because details are not retained for long and do not in themselves adequately furnish a well-educated mind, generalizations, skills, and attitudes must also receive strong emphasis.

Before an examination, its nature and purposes should be explained in class in order to minimize students' apprehensions and to make the examination as much as possible a learning experience. A Library file of old examination questions and answers can also serve these purposes. After an examination, students should be given an opportunity to go over their answers so that they may profit from their mistakes.

An examination (or series of quizzes) early in the semester is helpful in giving an early demonstration of the standards used in the course.

a. Machine-scored

Machine-scored or machine-scorable examinations when thoughtfully composed can be very valuable in testing student knowledge, and some types of student thinking (see point 8). On the other hand, they neither test nor give practice in certain types of thought and expression which our graduates should have. It seems, therefore, desirable that a substantial part of the grade of each course be based on other evidence than that from machine-scored examinations. Because of the ease and frequency with which students reconstruct examinations for fraternity and other files, questions should be extensively altered from term to term.

b. Essay

In essay tests, students should be asked not only to recapitulate material, but also to apply that material to fresh problems. The test should itself provide opportunity for some creative thought. It should teach as well as examine. Open-book tests and take-home tests are often successful in encouraging student thinking, decreasing cheating, and encouraging the use of the Library.

c. Oral

Students find oral examinations valuable because of the opportunity for having difficulties explained and for having intimate contact with the instructor. Instructors find them valuable for reasons comparable to the students', and also because cheating is impossible and the students' strong and weak areas can both be explored.

5. *Time and displeasure*

We fully realize that what we recommend concerning papers and essay tests requires a large amount of faculty time in reading and annotating material that is often very dull. The dullness can to some extent be relieved by the instructor's ingenuity in choosing topics for student writing and in encouraging students to write their best. As the quality of papers improves, the time required in grading them decreases somewhat. But how can a teacher with a hundred or more students read essays and papers from all of them? Perhaps the best thing to do is to stagger the assignments so that only a moderate number of papers reaches his desk in any single week. If the first hour examination is machine-scored for one section of a course, it can be essay-type for a second section, and *vice versa* for the second hour examination. Or each examination can be part essay and part machine-scored. In one way or another, almost every course can be arranged so as to include a meaningful quantity and quality of student writing.

6. *Discussions*

Discussions are not necessary or desirable in all courses, but are helpful in a great many. A student's facility in discussion is not often a major test of his

intellectual ability. Such facility is, however, often useful, and is in some cases necessary (*e.g.*, in some postgraduate studies and employments, and in meeting one's responsibility to rescue discussions from gross errors of contents or procedure). In teacher-led discussions, it is wise to call frequently on nonparticipating students with the hope of

a. encouraging their careful preparation of assignments,

b. accustoming them to participation in discussion.

Both teacher-led discussions and student-led discussions have appropriate uses in college. Each type should aim at developing both an understanding of assigned material and a clarification of personal reactions to, and evaluations of, the material. Often it is desirable to require that students pass a quiz or a machine-scored test on a given topic before discussing it. Particularly in the case of student-led discussions, it will not be satisfactory simply to provide time for discussion; the skills necessary for conducting a good discussion will need to be explained and emphasized repeatedly.

7. *Use of the Library*

Every instructor should consciously employ one or more devices for encouraging the intelligent use of the Library. These might include

a. assignment of research papers or short problems requiring outside reading;

b. assignment of readings not in textbooks, the readings to be covered in discussions or examinations;

c. recommendation of collateral reading with critical comments;

d. decreased use of synopses and other secondary sources with increased emphasis on primary sources (the data on which generalizations are based).

8. *The development of syntheses (For this section the Committee is drawing almost entirely upon suggestions from Mr. Buckingham.)*

The last item of the preceding section introduces the desirability of having students create their own syntheses of their courses. But in many cases they will have to be taught how to make such syntheses. Such teaching might occur primarily in freshman and sophomore courses (both general education courses and elementary courses offered by departments). Some decrease in the amount of material covered by such courses might be necessary. These steps in teaching the creation of syntheses are suggested:

a. objective test evidence of acquaintance with materials;

b. discussion (for 15 to 20 per cent of the time of the course) of the material to be synthesized and of forms which the synthesis might take (with emphasis on the accuracy, relevance, and adequacy of ideas);

c. writing of a paper expressing a synthesis.

9. *The brilliant student*

Brilliant students often lose interest in courses which do not challenge them. If all routine procedures of a course are as challenging as possible but the brilliant student seems uninterested, he can be given supplementary reading, writing, or other projects of increased complexity; can be encouraged to formulate and solve problems for himself; or can be given special opportunities (*e.g.*, for leading discussions after he has been trained in discussion techniques).

10. *Student criticisms*

Repeated clarification of the intentions and methods of a course tends to decrease adverse student criticism. Criticisms will continue, however, and many

instructors improve their courses by means of student questionnaires, both during the semester and at the end. Best results are usually achieved through requiring all students to hand in unsigned comments on specified problems and on problems which they think of.

11. *Grades*

The examining committee of the Middle States Association expressed in its report (p. 14) a feeling that grades in a few departments were out of line with those of the rest of the college. We feel that in special circumstances very high or very low class averages are appropriate. On the whole, however, over one or two years a faculty member who is setting high standards will probably find opportunity for giving some A's, and necessity for giving some F's, particularly if he teaches large numbers of students, or students in general education and elementary courses. Grades—particularly semester grades—should not be based on a curve alone. Once semester grades have been given to the Registrar, they should not be changed unless the instructor has made an error.

12. *Conclusion*

We return to the Senior Seminar with which we began. We share the faith which its committee once expressed:

> The seniors in the seminar are able to do better work than they have done. They can be stimulated to think critically and creatively if the faculty will not be satisfied with less than the student's best. All too often, we felt that students had not been called to real intellectual combat. We have been satisfied with mediocrity when real excellence was possible.

Respectfully submitted,

The Committee on Instruction

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The National Commission on Accrediting: Its Next Mission

WILLIAM K. SELDEN

MARK TWAIN is said to have remarked that everyone talks about the weather but no one does anything about it. One could say that everyone in education talks about accrediting but a few do try to do something about it. Just what to do, however, has for some time been the big question.

At no time since 1895, when regional accrediting was first initiated by the Southern Association of Colleges and Secondary Schools, or since 1904 when national professional accrediting was initiated by the American Medical Association, has there been a lack of complaints and criticisms. As the number of national professional accrediting associations increased, especially in the 1930's and 1940's, protestations against the procedures, practices, and policies of these agencies have multiplied.

Criticisms of accrediting

One of the first to call public attention to the problems of accrediting was Dr. Fred J. Kelly, for many years specialist in higher education in the United States Office of Education. In 1927 he made a speech entitled "The Influence of Standardizing Agencies" in which he described three chief dangers: (1) Standardization endangers public confidence in a profession by limiting the number entering the profession, thereby increasing fees for professional services; (2) Standardized schools and departments get a disproportionate amount of funds; and (3) Agencies demand a uniformity of educational practice, thus impeding progress.

Over a decade later, in 1938, Dr. George F. Zook, president of the American Council on Education, spoke on the subject, "Who Should Control Our Institutions of Higher Education?" and declared, "Once more the individual institutions are asking for freedom—this time from the requirements of a variety of associations." The following year the American Council on Education called a conference on the subject of accrediting, at which Dr. Samuel P. Capen, then chancellor of the University of Buffalo, delivered his now famous speech, "Seven Devils in Exchange for One," in which he inveighed against the development of accrediting. The report of this conference, entitled "Coordination in Accrediting Activities," contained the following statements:

> One cause for the growing concern about the activities of these bodies [accrediting agencies] had been their rapid multiplication and the widening scope of their work. Educational institutions composed of a number of schools or divisions are finding the task of supplying the information requested by these agencies, and subjecting themselves to their frequent inspection, irritatingly burdensome. And the mounting costs of this procedure in both time and money are becoming prohibitive. . . . Trustees, administrative officers, and faculty members have therefore begun to wonder who really controls our educational institutions. They see final determination of educational policy consciously or unconsciously being assumed by accrediting agencies and they are exercised by what they consider a usurpation of their own legal and proper responsibilities.[1]

[1] *Coordination of Accrediting Activities*, "American Council on Education Studies," Series I, No. 9 (Washington: American Council on Education, 1939).

Formal actions

Formal concern with the problems of accrediting was shown by various educational organizations as well as by individuals. The National Association of State Universities in 1923 began seriously to consider the growing problems resulting from accrediting. Later, in 1938, a committee was authorized which led to the formation of the Joint Committee on Accrediting representing, in time, the Association of Land-Grant Colleges and Universities, the National Association of State Universities, the Association of Urban Universities, and the Association of American Universities. This committee listed what have been called the "six outstanding evils" of accrediting agencies: (1) too many agencies; (2) too much duplication; (3) too great costs for evaluations; (4) too much emphasis on quantitative and superficial standards; (5) too much domination by outside groups; as well as (6) activities which tend to destroy institutional rights and freedom.[3] Incidentally, these same criticisms are frequently heard today.

Endeavoring to face these problems, first under the chairmanship of John J. Tigert, then president of the University of Florida, followed by Reuben G. Gustavson, then chancellor of the University of Nebraska, the Joint Committee on Accrediting found itself facing a difficult task. The task was complicated even further when in November 1948 the Association of American Universities announced with little warning that it had "terminated its work in the field of accrediting" and made no provision for anything to take the place of its practice of listing approved institutions. This development demanded a new look, and the new look led to the formation of the National Commission on Accrediting.

[3] Paraphrased from an address given by Cloyd H. Marvin at the 36th Annual Meeting of the Association of American Colleges, January 10, 1950.

This new look was initiated at a meeting of individuals interested in the problems of accrediting, held in Washington, D.C., at the George Washington University in December 1948. Following this meeting, through the leadership of Chancellor Gustavson, Cloyd H. Marvin, president of George Washington University, and others, the Joint Committee on Accrediting was transformed in 1949-50 into the National Commission on Accrediting. The Association of American Colleges which also had been interested in the problems of accrediting joined the four sponsors of the Joint Committee to create the National Commission on Accrediting. Later the American Association of Junior Colleges and the Association of Teacher Education Institutions joined the commission.

The National Commission on Accrediting

The early days of the commission comprised a busy period. Meetings, conferences, and discussions absorbed much of the thought and efforts of the officers and commissioners whenever they could spare time from the responsibilities of their own colleges and universities, and sometimes even when they could not spare such time. They inherited the records and files of the former Joint Committee on Accrediting and they had the benefits of the experience of many of the commissioners who had formerly served on the Joint Committee or who had personal knowledge of accrediting. They also received the advice and encouragement of some who hoped the National Commission would abolish all accrediting and of others who hoped the commission itself would undertake directly the responsibility for accrediting. Still others expected the regional associations to assume the primary functions even though at the time the National Commission was being created only four regional associations actually pursued accrediting and

did so in different ways and with varying degrees of success.

Facing these problems and the added problem of an indeterminate number of national professional accrediting agencies, some of which were cohesive and well organized as well as powerful, the National Commission decided to call a moratorium on all accrediting while it studied the situation and sought a solution. Many professional associations and institutions abided by this request for a moratorium but some resisted. These later explained that because of legal references to accredited institutions in state licensure laws the accrediting activities could not be interrupted.

This period was one of strain and tension while policies for accrediting were being forged on a national scale. The results of the approach by the commission were not all that some of its vocal supporters had originally desired. The results, however, are consistent with the noncentralized pattern of education in this country and serve as the basis for our present policies and practices in accrediting.

Results of NCA approach

The *first* result was that the regional associations assumed the primary responsibility for the formal accrediting of colleges and universities. All six regional associations now are actually accrediting institutions.

Second: The regional associations voluntarily agreed to deal only with those national professional accrediting agencies recognized by the National Commission on Accrediting. In turn, the colleges and universities were requested by both the commission and their respective regional associations to deal only with the officially recognized professional agencies.

Third: In order to be recognized, all professional agencies were expected to meet certain requirements, including the provision that they agree to coordinate their accrediting practices and procedures with the appropriate regional associations. As a consequence, of the many professional agencies originally considered by the commission twenty-one have been recognized through March 1957.

Fourth: The policy that no more than one agency would be recognized in a particular field of study made it possible to reduce the accrediting agencies to one each in such fields as journalism, nursing, and social work.

Fifth: Discussions with representatives of the various organizations, as well as the publicity attendant upon these discussions, served to encourage all accrediting agencies to restudy their own policies and procedures and place greater emphasis on the qualitative accomplishments of the institutions. In addition, other organizations were, and are continually, being encouraged not to undertake or assume accrediting activities.

These results have helped to develop some answer to two questions that President Marvin included in a covering memorandum for the report of the December 1948 meeting at which ideas for a commission were being developed. He wrote:

> There are two problems with which colleges and universities must reckon. First, what type of accrediting are we going to set up to protect the cultural or liberal arts work? And second, what can be done to stem the serious inroads of administrative authority and freedom of action that result from the separate, uncoordinated, and sometimes unreasonable demands of the more than forty specialized accrediting associations?

Today there are fewer misunderstandings, less confusion, and more orderliness in accrediting than there were a few years ago, even than there were this past

year when the issue of a national accrediting agency in the field of teacher education was unresolved. But there is much that needs to be done, and in one sense only a beginning has been made.

Accrediting of teacher education

The problems in accreditation of programs of teacher education were especially involved and complex. They represented more than the conflict between the extreme proponents of liberal education and those of teacher education, although this struggle played a vital part. Arguments for and against all accrediting were expressed at conferences and meetings, and the question of the place and effectiveness of the National Commission itself was debated.

Further steps for improvement in accrediting were delayed while the issue of the recognition of the National Council for Accreditation of Teacher Education was being resolved, finally and fortunately on an amicable basis. Other actions by the commission were stymied by the impasse. Cooperation, understanding, and confidence between the regional associations and the commission were strained, and tensions among other organizations developed. After numerous meetings and conferences agreements were reached for a definite change in the structure of NCATE and the immediate issue was resolved. On October 10, 1956 NCATE was recognized by the commission as the national professional accrediting agency in the field of teacher education. Since then, in accordance with NCA policy, NCATE has developed agreements for cooperation with most of the regional associations. The way was now cleared for the commission to proceed to other problems.

Recent commission actions

At its 1957 annual meeting on March 2 the National Commission on Accrediting took three major actions.

First: It approved an agreement reached after months of negotiation with the American Association of University Women whereby that organization will make appreciable changes in its procedures of approving colleges and universities and place greatly increased reliance on the regional associations. This agreement has been developed with a spirit of cooperation and with some compromise on the part of all concerned.

Second: The commission adopted *A Statement of Criteria for Recognized Accrediting Agencies*[3] to which it had been giving thought and study for several years. Before adopting the statement, the commission had obtained the benefit of advice and suggestions from officials of all presently recognized regional and national professional accrediting agencies as well as from many others interested in higher education. This criteria statement outlines the basis on which recognized accrediting agencies will be expected to operate.

Third: In recognition of the need for close cooperation, coordination, and confidence between each of the regional associations and the commission, an official representative of each regional association was invited to and did attend the March 2 meeting of the National Commission. A standing invitation has now been extended to such representatives to attend future meetings of the commission. This is important because improvements in accrediting are not likely to be developed without harmony in both purpose and policy among the regional associations and the commission.

The regional associations have as members the same colleges and universities which are members of the National Commission. It is not possible during any protracted length of time for institutions

[3] Obtainable from the National Commission on Accrediting, 1785 Massachusetts Avenue, Washington 6, D. C., upon request.

to support the commission if its policies on fundamental questions are directly divergent from those of the regional associations of which they also are members. And it should be mentioned that some of the strongest regional associations have been committed to the practice of accrediting. At the same time the regional associations are not prepared to cope with issues on a national basis as the commission can and must do; and all of the professional accrediting agencies are national in scope.

Its next mission

Professor Sidney Hook in a talk entitled "Education and Creative Intelligence" stated "The history of education, especially American education, leads one to the generalization that educational institutions respond more to social needs and pressures than to first principles."[4] If this be so, it is all the more urgent that higher education through the regional associations and the National Commission on Accrediting be united in giving leadership for unity and cohesion and not permit higher education to be fragmentized and divided by the pressures of specialized groups or organizations. This not only is the next mission of NCA; it has been its underlying mission from the date of its creation.

At a special conference called by the commission on January 8, 1952 to consider accrediting, Chancellor Gustavson said:

> The immediate reason for the formation of the NCA was to find ways and means of dealing with a large number of accrediting agencies which were having a powerful impact on educational policies. In a larger sense, however, the NCA has as its purpose the preservation of the basic principles of sound education that have developed over the years. . . .

It is true that the basic problems in accrediting which people criticized in the 1920's and 1930's are still with us. It also is true that the factors which encouraged the formation of the National Commission continue to exist. Much time and energy have been spent in considering what decisions should be made and what actions should be taken. Yet conditions are certainly improved in many ways and the unresolved issues now appear more promising for solution than at any time in recent years.

The issue of national accreditation of programs in teacher education has been settled. The professional accrediting agencies appear willing and, in many cases, anxious to follow sound leadership and use judgment in further improving accrediting policies and procedures. And most important, all of the regional associations are interested in cooperating among themselves and working closely with the National Commission on Accrediting.

What David D. Henry, now president of the University of Illinois and president of the National Commission on Accrediting, said in 1952 is as true today as it was when he spoke of solving the various problems in accrediting:

> This task is complex and will require considerable energy and time on the part of a large number of people and organizations. Its completion will require educational statesmanship, and a willingness on the part of all working with the problems to place educational goals and services to the public above all other considerations. These difficulties should not prevent our making the effort, however, for the task may well be measured as the most important for higher education in the present decade.

[4] *School and Society*, July 7, 1956, p. 3.

Australian Higher Education

MARY E. MURPHY

THE COLONIAL nationalism which flourished in Australia during the last century included a declaration of independence from the influence of European culture. In 1887, the Sydney *Bulletin* exhibited this bias when it stated: "The university in its absurd reverence for the extrinsic and the foreign, goes outside the literature, the language, the life and the history of its own country to seek for specious inspiration in a museum of antiquities, to borrow from worthless curiosities in the ruined catacombs and dusty cromlechs, which doubtless owed their origin to giants, but to giants of a long-forgotten epoch." Gradually this influential paper outgrew the expressed attitude, and printed English as well as local literary products, but the university has never assumed the place in Australian life and culture that it has, say, in Great Britain or the United States.

In a country where equality is the watchword—"Let the word, Australia, dignify the lowliest man," someone has written—equality of education, especially on the higher level, has never been achieved. A persistent suspicion of the educated man or woman continues to be evident; it is this suspicion which handicaps university budgets and turns the faces of many honor students to Britain where there is a wider scope for graduate work and a greater possibility for eventual recognition as a scholar or teacher.

When an American goes to Australia, as the writer did recently under Fulbright auspices, he is struck with the natural beauty and potential wealth of a nation which has yet to enter the full flower of its development. That stage will not be reached until more Australians appreciate the advantages of increasing the number of young people whose lives are enriched by contact with an institution of higher learning. Deep down in their hearts, few Australians believe that universities have an important role to play in national affairs; few admit that women should be educated equally with men so that the two partners may enhance the domestic economy and contribute to their nation's maturation as a great power in the Pacific. Unfortunately, some of Australia's universities are nearly bankrupt. It is an ambiguous, complex situation which has many aspects, most of them closely bound up with the national character and with the basic lack of interest in quality expressed on every hand in Australia. It is also closely connected with the fact that only the capital cities have good public libraries. Even in some of the capital cities, libraries are inadequate. Adult education throughout the nation is on a small scale, carried on by the Workers' Educational Association which uses university faculties and facilities. The Australian Broadcasting Commission has assisted the dissemination of culture by sponsoring concerts, plays, and lectures, frequently bringing people from abroad to participate in its program.

Today the vast majority of Australian children leave the elementary school at fourteen. In Tasmania, however, education is compulsory up to sixteen years of age, in New South Wales to age fifteen; the remaining states, except Queensland, have passed enabling legislation and all have announced their intention of raising the school-leaving

age from fourteen to at least fifteen years when the present shortage of buildings and teachers is overcome. A small percentage of students receives technical or other education thereafter, while only a handful continues studying up to and beyond the university level.

The universities of Australia consist of the following: University of Sydney, founded in 1850, maintains ten faculties —arts, law, medicine, science, engineering, dentistry, veterinary science, agriculture, economics, and architecture; University of Melbourne, 1853—arts, education, science, law, medicine, engineering, architecture, dental science, agricultural science, veterinary science, and commerce; University of Adelaide, 1874—law, medicine, dentistry, arts, science, agricultural science, music, and engineering; University of Tasmania, 1889—arts, science, engineering, law, and commerce; University of Queensland, 1909—arts, science, engineering, commerce, agriculture, law, dentistry, veterinary science, and medicine; and University of Western Australia, 1911—arts, science, law, engineering, and agriculture. The last named, the only free university, has been described as the most beautiful institution of higher learning in the Southern Hemisphere. Each of these six universities operates under an act of the state legislature, each is partly financed by grants from its state government, and each is located in the capital city of the state.

The University of New England, at Armidale, New South Wales, was formerly New England University College of the University of Sydney, so established in 1938; in 1954 it was accorded independent status, by legislative act. Canberra University College was organized in 1930 as a branch of the University of Melbourne. In addition there are also the New South Wales University of Technology, established in 1949 in Sydney by the government of New South Wales, and the Australian National University at Canberra, which offers primarily graduate work. This last-named institution is discussed later in the present article.

It is interesting to note that no Australian university was founded or supported by an individual benefactor or social organization; therefore, there are no institutions comparable to the large privately endowed American universities. The largest single gift was made to the University of Western Australia which received £A425,000 from Winthrop Hackett, a newspaper publisher.

In 1900 there were 2,000 students enrolled in all Australian universities; in 1939, 14,000 (11 percent of the Australian population aged seventeen years); in 1948, 32,000; in 1955, 25,000 (of which one-half attended the Universities of Melbourne and Sydney). Of the 25,000, representing approximately 25 percent of the population aged seventeen years, 15,500 were full-time students, 7,100 attended classes on a part-time basis, and 2,300 were external students. All the universities admit part-time students, and the Universities of Queensland, Melbourne, Tasmania, and Western Australia admit external students. However, medicine and engineering may be studied only on a full-time basis. There has been much discussion of the necessity of raising entrance requirements and of encouraging students to live in residence. All the institutions admit women to their degree programs, following the example, in 1879, of the University of Melbourne.

Since 1950, Australian universities have conferred not less than 4,000 degrees annually but, in spite of this twofold increase since 1939, the supply of the graduates has fallen far short of demand in many fields. Table 1 shows the total number of graduates at the bachelor level by faculties.

TABLE 1

TOTAL NUMBER OF GRADUATES AT BACHELOR LEVEL BY FACULTIES

Faculty	1939		1953		% Increase 1939–53
	Number	Percent	Number	Percent	
Arts	438	28.72	871	25.88	99
Law	109	7.10	194	5.77	78
Commerce	107	7.00	274	8.13	156
Education	18	1.18	46	1.36	156
Science	219	14.36	523	15.54	139
Medicine	328	21.60	610	18.11	86
Engineering	95	6.22	434	12.89	357
Agriculture	42	2.75	83	2.47	98
Veterinary science	27	1.77	57	1.69	111
Dentistry	64	4.19	177	5.26	177
Music	27	1.77	18	.53	−33
Architecture	51	3.34	79	2.34	55
Divinity	.....	.....	1	.03	.....
Total	1,525	100.00	3,367	100.00	120.5

The most significant increase has been in number of graduates with engineering degrees. In recent years banks, insurance companies, many industrial and commercial enterprises, and the Commonwealth Government have created a demand for nontechnical graduates, a demand which has considerably exceeded the available supply. This has been more noticeable in commerce where there is an increasing demand for graduates to fill openings of an administrative nature, while the supply of graduates with accountancy qualifications, especially industrial and cost accounting, has also been insufficient to meet demands. More attractive salaries and conditions of employment in the schools have encouraged many to enter the teaching profession, but a serious shortage of teachers in both private and government schools still prevails. The smaller proportion of medical students, as shown in the foregoing table, is not due to any neglect of the profession but rather to inadequate facilities.

In the last two years employers have shown an increasing interest in technical men for commercial positions. This has been most evident in the case of agricultural scientists, chemists, and engineers, all of whom have been offered openings concerned with technical sales, technical advice, and production developments. The higher percentage of students completing a science degree (as shown in Table 1) is due largely to the greater number of graduates required by various Commonwealth and state departments. Defense research establishments have been expanded; the Woomera Rocket Range and the Snowy Mountain Hydroelectric Scheme, for instance, have been developed on the national level, while state public works, irrigation, water, and soil conservation programs also demand large numbers of university graduates. In 1939 Australian universities were barely equipped with the essentials of staff, buildings, and equipment for a student population of 14,000. Enrollment since then has more than doubled but the universities, owing to financial difficulties, have been unable to increase their faculties commensurately. This situation seriously handicaps scientific teaching and research and work in other intellectual areas.

In 1946 the Commonwealth Govern-

ment enacted a measure to establish the Australian National University at Canberra. This is primarily a postgraduate institution containing the schools of medicine, physical science, social science, and Pacific studies. It was hoped that it could prevent the drift of exceptional students overseas by providing facilities for master's and doctor's degree work in Australia at the National University. The feasibility of segregating graduate studies in one institution, however, has not been sufficiently tested to date. The Commonwealth Government has continued to appropriate large sums for the National University, rather than follow a program for aiding state universities to expand postgraduate work within their boundaries. In the early years Sir Douglas Copland, recently High Commissioner to Canada, served as vice-chancellor of the National University. He has now been appointed director of the new Administrative Staff College shortly to be organized along similar lines to the Staff College in Henley-on-Thames, England, which trains business executives.

A member of the staff of the Australian National University has pointed out that "not until this institution has had time to demonstrate whether it can assemble a body of scholars and produce work which bears comparison with the published work that comes from other great universities will we know whether it can fulfill the role in Australian academic and intellectual life for which it was intended by its sanguine founders."

While the Australian universities are continually endeavoring to strengthen their postgraduate activities, students preparing to take advanced degrees tend to think in terms of overseas institutions of higher learning, usually in the United Kingdom, where facilities in many fields are better than those in Australia. The reason behind this apparent neglect by Australian university authorities is that resources, although increased from time to time by university grants, have been inadequate to meet the immediate requirements of a growing population.

Australian universities have been unable to adjust their revenue to meet the rising costs caused by inflation. By overseas standards, the expenditure per student in these universities is relatively low, being about 60 percent of that in the United Kingdom and substantially less than in the United States. Details of expenditures of representative universities in Australia and Britain are compared in Table 2.

By 1960 it has been estimated that enrollments will total approximately 36,000, by which time, it is thought, the full effect of the Australian present immigration program will be experienced and student members will be increasing by about 2,000 each year. Already the Universities of Melbourne and Sydney are almost twice the size of universities in the large provincial cities in the United Kingdom. Although existing universities, if they receive increased financial support, should be able to meet immediate requirements, the establishment of new institutions may prove necessary at the end of this decade. Over 50 percent of all university income today is derived from government grants (Commonwealth and the states); 5 percent from private endowments and donations; and 40 percent from fees. In 1951 the Commonwealth Government enacted a bill which empowered it to make grants to the state universities. It is interesting to note that expenditure per capita of population per year in state schools was £A2 in 1900, and £A4 14*s*. (at today's price) in 1950. For technical colleges the figures were 2*s*. and 14*s*. (at today's prices), respectively. The annual income per capita in Australia is £A 448; the country ranks eighth among all countries in percentage of growth in secondary schools and colleges.

TABLE 2

COMPARISON OF EXPENDITURES OF REPRESENTATIVE AUSTRALIAN AND UNITED KINGDOM UNIVERSITIES

(Australia 1953; United Kingdom 1953-54)

University	Full-time Equivalent Students*	Total Expenditure £A	Expenditure per Student £A
Australia			
Sydney	6,364	1,542,703	242
Melbourne	5,578	1,391,074	249
Adelaide†	2,992	695,886	233
Queensland	2,684	771,233	287
Western Australia	1,347	472,957	351
Tasmania	520	231,353	445
Total, Australian universities	*23,449*	*6,292,953*	*268*
United Kingdom			
Birmingham	3,120	1,409,790	452
Bristol	2,775	1,331,569	480
Leeds	3,455	1,512,256	438
Manchester‡	4,158	1,670,560	402
Nottingham	2,074	674,240	325
Sheffield	2,029	915,721	451
Edinburgh	5,101	1,750,643	343
Total, United Kingdom universities	*88,480*	*37,377,432*	*422*

* The figure for full-time equivalent students has been calculated counting a full course or full-time student as one student unit, and a part course, part-time, or external student as a half student unit.

† Includes Waite Agricultural Institute.

‡ Does not include Manchester College of Technology.

Source: National Bank of Australia, Ltd., *Monthly Summary of Australian Conditions.*

In each of the six states, a university governing body exists in the form of a council or senate constituted in the manner prescribed in the University Act. Although this body varies from state to state, it usually contains representatives or nominees of the legislature, members of the university teaching staff, graduates, and, in three instances, undergraduates. The chancellor is usually a distinguished citizen who holds the office in an honorary capacity. All the universities except Queensland employ a paid vice-chancellor (or the equivalent) who is the permanent administrative head, devoting his full time to the development of university policy. The supreme academic authority in all Australian universities, with the exception of Adelaide, Queensland, and the New South Wales University of Technology, is usually delegated to the professorial board which advises the governing body on academic matters and, after receiving reports from the faculties concerned, drafts regulations for approval of the governing body.

In Australian universities the term "faculty" strictly applied refers to the teaching staffs of a group of departments, but it has come to be used generally as meaning any given school of studies. Older and larger faculties may contain many departments—for instance, the Arts Faculty in the University of Sydney has more than fifteen departments, while newer faculties, such as education at University of Melbourne, are not subdivided. The head of each faculty has the title of dean.

Generally speaking, the Australian universities have preserved the tradition of academic freedom which flourishes in Great Britain. But pressure groups are

always present in Australia, and politicians have been known to try to influence university administrators or professors. At the present time, two or three Australian universities forbid their professors to be members of political parties.

Unfortunately, most of the universities are understaffed and possess inadequate equipment for the number of students enrolled. Insufficient time is available to the staff for research, and there is not enough specialization by staff members. It may rightly be declared that few Australian universities can claim to be great centers of creative thought. There is still no chair of sociology in any Australian university and the study of political science has only been introduced into the curriculum recently. Insufficient attention to date has been devoted to Australian history and political and social institutions, and only the first steps have been taken in studying the problems and civilizations of Eastern Asia and the Western Pacific.

From 1933 forward, therefore, graduate appointees have filled responsible posts in many government departments, especially in the fields of economics and statistics. It now is apparent that senior positions will increasingly be filled by people who either have graduate status before they enter government service or who acquire it by part-time study after entry. In addition, employment of research personnel in most sections of the Commonwealth administration has increased, and this should stimulate training of university men and women in every field of the social sciences.

During the great depression, 1929–34, senior university economists came prominently to the fore as economic advisers to the Australian governments, especially to the Commonwealth Government. Several of the senior economists made their marks and became either permanent or wartime advisers and even administrators within the Commonwealth structure. In 1933, the Public Service Act was amended to provide that one-tenth of each year's appointments should be open to university graduates under the age of twenty-five.

In these respects, and in other ways, too, Australian universities compare unfavorably with similar institutions overseas. Basically, they lack the tradition which blesses institutions of higher learning in Britain and the public support enjoyed by universities in the United States. Australian universities have had almost no influence on the cultural life of the country or on the development of social and political thought.

Over the years most of the staffs of the Australian universities have been recruited from British universities or from the ranks of Australians who have had some postgraduate work and often some teaching experience abroad. Early students at the University of Melbourne had the opportunity of listening to lectures by Hearn on constitutional history; a Sydney student in more recent times could pursue his work in geology under the direction of the discoverer of the South Magnetic Pole, Edgeworth David; and a Melbourne student of biology had the benefit of original research in anthropology by Baldwin Spencer. The development of scientific research and the application of research to agriculture, industry, and daily life have been greatly promoted by the establishment of the Commonwealth Scientific and Industrial Research Organization (CSIRO) by the Commonwealth Government in 1926, but there is a pressing need for atomic research.

The minimum age for admission to university study is seventeen at Melbourne, Western Australia, and Tasmania, and sixteen at Queensland and Adelaide. No minimum age is maintained at Sydney, except seventeen years

for law. Entrance normally follows five years of secondary education (four years in Queensland and six in Victoria). Admission is gained by examination, with students from overseas universities admitted by special test. Fees vary by institution. For example, at Sydney University, in the arts, a B.A. pass degree, which takes three years, requires tuition of £A168, while an honors degree, which takes four years, carries a fee of £A176-£A208. The LL.B. requires four years and tuition of £A254. In the field of medicine two degrees are awarded, the M.B., and the B.S., both of which require six years, with tuition fees of £A505. In science the B.S. pass degree, three years, costs £A216; an honors degree requires four years and carries a fee of £A234. The B.Econ. is a four-year degree, for which tuition is £A222; architecture requires five years and the fee is £A384; engineering, four years, fee £A346–£A376; dentistry, four years, fee £A391; pharmacy, 2 years, fee £A95; and forestry, four years, fee £A146.

Each university has a limited number of privately endowed scholarships which are awarded by competition. In addition there are a number of state government scholarships available. The Commonwealth Scholarship Scheme which began operation January 1, 1951, provides 3,000 competitive scholarships each year to boys and girls who wish to study in Australia. To be eligible for these, students must be at least twenty-one years of age and residents of Australia. Under provisions of the Fulbright plan agreed to by Australia in 1950, provision is made for students from the United States to receive aid if pursuing approved studies in Australia, and Australian students may, if approved, receive aid to travel to and from the United States and to study here.

In 1949 the full-time teaching staff in the six Australian universities, the University of New England, Canberra University College, and the New South Wales University of Technology totaled 1,395 (professors, associate professors, readers, lecturers in charge, 273; lecturers and assistant lecturers, 868; demonstrators and tutors, 246; external studies, 8). The part-time teaching staff in the same categories was 11, 1,232, 267, 79, and 1,589. The Australian National University, as of April 1951, had a teaching and research staff in medicine of 12; physical science, 12; social science, 9; Pacific studies, 10. Students enrolled in the ten Australian universities in 1950 were as follows: full course, 18,936; part course, 8,060; external, 2,809; postgraduate, 822; total 20,627. This compares with an estimated national population of 8,037,000 at that date.

The Commonwealth Government in 1942 established the Universities Commission to ensure the entry of an adequate number of students into "reserved" faculties regarded as essential to the war effort. It administered a generous scheme of financial assistance to these students. In 1945 the commission was given a permanent statutory basis by the Commonwealth Education Act under which the Commonwealth Office of Education was also constituted. Since that year the commission has administered a scheme of financial assistance to certain students and has conducted the university aspects of the Commonwealth Training Scheme which was devised to assist in the re-establishment of ex-servicemen of World War II. Since 1951 it has been responsible for the administration of the Commonwealth Scholarship Scheme.

The calendar unit in Australian universities is an academic year of study (usually about thirty weeks) in a given subject or group of subjects. The typical course in an arts curriculum involves attendance at from two to four lectures a week, each of an hour's duration. At-

tendance may also be required at smaller tutorial classes or discussion groups. In some faculties, such as arts, economics, and commerce, credit towards the complete course may be obtained by passing individual subjects; in other faculties—medicine and engineering, for instance—the unit is the year's work in several subjects, all of which must be passed in the same academic year.

Attainment of a first degree in arts or science depends on completion, usually by written examination, of a specified number of subjects and must include at least three or four years' study in the student's major subjects, accompanied usually by not less than two years' work in another field of study.

The university year is divided into three teaching terms with a break of two or three weeks between terms. In all states, the university year begins in March and concludes in December, with annual examinations starting in November and the long vacation running from that month until March. In the later years of professional courses, such as medicine and dentistry, it is common to add a short term between January and March. The student who wishes to specialize and carry his studies beyond those required for the ordinary degree may elect to take an honors course. In some of the Australian universities the honors candidate attends lectures for pass students and also other special courses; in other institutions, a clear differentiation is made between pass and honors courses from the first year forward, and the student must plan his course accordingly. However, all honors courses involve additional reading, usually additional lectures and tutorials, additional examination papers, and frequently an extra university year of study. Candidates who attempt honors but fail to reach the required standard may be awarded a pass degree. In general, Australian universities recognize each other's matriculation requirements and each other's degrees. Australian degrees are accepted in almost every part of the world, and Australian postgraduate students have found little difficulty in meeting overseas educational requirements.

One serious problem to be met is the drift of many promising young Australians overseas where, frequently, greater opportunity exists for employment, professorships, and research. The movement of Australians abroad—especially of highly educated women who have a far too restricted panorama for service in their homeland—robs Australia of professional, scientific, and technical talents badly needed in every aspect of the economy. Once away from the Antipodes, the Australian seldom returns. The names of many well-known native sons and daughters come to mind: Nellie Melba, Eileen Joyce, Marjorie Lawrence, and Percy Grainger in music; Robert Helpmann in the ballet; Sir Keith Hancock, Elton Mayo, and Arthur Smithies in history and economics; Sir Howard Florey in science; Professor Gilbert Murray in the classics; and Lords Bruce and Baillieu in politics. Nostalgia for Australia appears to play an insignificant role in their lives; the desire to return and enrich their homeland plays a smaller part than their feeling of usefulness in an overseas post. The latter is the important thing to remember, for a scientific hero is as yet only partly extolled in Australia. It is the common man who receives the accolade rather than the co-discoverer of penicillin!

A noted statesman, Sir Frederic W. Eggleston, sums up this situation when he says:

> The attitude of the ordinary Australian to education is not encouraging—so many people have succeeded in life without education, in politics, in business and in the public service, that there is not the "magic" in education which exists in some countries. It is not regarded as a step to wealth or to

a higher social grade. The Australian . . . often lacks the necessary mental discipline and background which are essential for real success in the job he undertakes. In these circumstances the school-leaving age is low and the universities are intended for those who display exceptional ability. Their standards are high but they tend to be regarded as technical schools for the professions. The sciences are strong, but the humanities are weak. The best students are always anxious to get "the finishing touch" abroad, and here their record is exceptionally good.[1]

Part of the disparagement of intellectual pursuits, in the past at least emanated from the fact that Australia has not needed many specialists on either the national or international level. Cut off from the rest of the world by vast distances, her citizens devoted themselves to minding their own business, only occasionally being drawn into the world orbit by a calamity, such as a war or a depression. Some of this insular attitude still persists, expressed today by an inability to accept criticism from anyone outside the family circle. Education can change this—education at every stage but especially in universities where minds will be sharpened for and directed to the tasks which must be accomplished before Australia can claim her place as a great international power. The potentiality for this recognition exists in the strategic position of Australia in the Pacific, but fulfillment of this role awaits wider knowledge of the homeland and the countries overseas and of the divergent and mutual problems which bind Australia to the other free countries now and in the future. Australia can no longer shut her eyes to Asia. She has to take part in its affairs on every level. If she is to do this, however, she will need to excel in intelligence. No effort and no expenditure which raise the level of intelligent understanding by Australians concerning Asia, and indeed the world, will be wasted. Herein lies the challenge to the Australian universities.

[1] Eggleston, "The Australian Nation," in *The Australian Way of Life*, ed. George Caiger (London: Wm. Heinemann, 1953), p. 17.

The Council at Work

Summary Report of Survey on Interest and Activity Relating to College Teaching

IN CONSIDERING what the American Council on Education might appropriately do to help solve the critical problem of providing a suitable quality of instruction for increasing numbers of college and university students in the years immediately ahead, the Committee on College Teaching has sought to take into account the activities and resources of the constituent and associate members of the Council. In order to obtain comprehensive information on this point the Committee asked the Council staff to undertake a systematic canvass of organization members of the Council to determine their current activities and plans, possible additional resources, and suggestions for action by the American Council on Education.

The questionnaire prepared for the purpose was sent to the approximately 140 constituent and associate members. It is gratifying to report that 106 organizations, three fourths of those circularized, replied to the questionnaire.

In view of the heterogeneous nature of the constituent and associate membership of the Council it is natural that some of these members have no direct interest in problems of college teaching. Thus, 48 of the respondents indicate no present or immediately contemplated activity, though only 21 of these anticipate no activity in the future and state that they have no resources which are relevant to the problem. Of the 58 organizations which report current activity and interest, approximately 20 appear to be particularly active in the field of college teaching.

The Committee on College Teaching has singled out as problems to which it wishes to give priority attention at this time (1) recruitment, (2) retention of faculty, and (3) how to make the most of scarce teaching resources,[1] and as far as possible the activities and plans here reported are classified under these headings. Other programs and plans are reported under the general heading, "Preparing College Teachers and Helping Teachers on the Job." For lack of space, many activities cited in the responses to the questionnaire are omitted from this report.

It should perhaps be noted that the activities summarized in this report are discussed from the perspective of the national organizations which responded to the questionnaire rather than from that of foundations or of individual educational institutions.[2] This report is presented in full awareness that significant activities have undoubtedly been overlooked. It is hoped, however, that this summary will contribute to greater awareness of what other organizations are doing and thus help to coordinate the efforts of groups working actively in this field.

Recruitment

A large number of the constituent and associate members of the American Council on Education are deeply con-

[1] See Charles G. Dobbins (ed.), *Expanding Resources for College Teaching:* A Report of a Conference on College Teaching (Washington: American Council on Education, 1956).

[2] Some of these activities have already been noted in the report "Foundation-Financed Activities Bearing Upon College Teaching," *Educational Record*, April 1956, pp. 153–62.

cerned about the problem of recruiting qualified persons for college teaching. One of the principal ways in which this concern has been expressed is in giving attention to the identification and motivation of potential teachers.

The Association of American Colleges requested its members in April 1956 to establish machinery for identifying and motivating outstanding college students to prepare themselves for careers in college teaching. The AAC subsequently has concluded that continuing services to institutions from the national level are needed to make these efforts fully effective. It is, therefore, seeking foundation assistance for the establishment of a small staff to collect and distribute information, convene conferences, arrange for outstanding teachers to visit institutions to talk about college teaching as a profession, and the like.

Other associations which are encouraging such activity on the part of their members are the *American Association of Junior Colleges* and the *American Association of University Professors.*

Another instance of encouragement of local activity by a national organization is the program of the *National Congress of Parents and Teachers* to help identify problems of the utmost importance to the family and to the community and to suggest projects for attacking such problems. Among projects suggested for local Parent-Teacher Associations are the planning of ways to create increased public appreciation of the worth and dignity of the teaching profession and the appointing of committees to encourage more young people to choose teaching as their profession.

Several Council members indicated that they are making, or intend to make, direct appeals to students or other potentially qualified persons to prepare themselves for college teaching. The *General Board of Education of the Methodist Church* has a Department of Personnel which specifically concerns itself with identifying and recruiting qualified teachers for Methodist institutions of higher learning.

An interesting variant from the fellowship device as a means of assisting graduate students was reported by the *Baptist Board of Education,* which operates the Baptist Graduate Student Center in Chicago for the purpose of reducing the cost of graduate education and presenting the challenge of teaching in Baptist colleges. The board also maintains an educational registry of potential teachers for Christian colleges.

The *American Association of University Women* is planning a questionnaire survey of its members for the purpose of determining the availability and educational readiness of qualified members to return to college teaching. The AAUW is also considering making an inquiry of educational institutions as to their willingness to take on qualified women as apprentices. Lying behind these plans is the assumption that apprenticeships would not only provide refresher work for full teaching responsibilities but also help conserve existing teacher resources.

For the purpose of interesting high school students in careers in mathematics, the Committee on Applications of Mathematics of the *National Academy of Sciences—National Research Council* is planning a pamphlet entitled "Mathematical Profiles" which will contain short sketches of the careers of outstanding young people in mathematics. The *Mathematical Association of America* is considering sponsorship of an essay contest on opportunities in the teaching of mathematics.

Several responding members noted that they sponsor scholarship and fellowship programs. Among these is the program of research fellowships of the Division of Medical Sciences of the *National*

Academy of Sciences—National Research Council to provide research experience in the preclinical sciences in preparation for careers in teaching and medical investigation. The division is also making a survey of the supply of, and demand for, fellowships in the medical sciences with a view to delineating areas of need so as to assist in the planning of future fellowship programs.

Since 1952 the *Association of Graduate Schools in the Association of American Universities* has administered the National Woodrow Wilson Fellowship Program, under which one-year fellowships are awarded for graduate work in the humanities or social sciences.[3] Fellows are selected from a list of students proposed by their professors as having great promise as teachers and scholars. The program is designed to recruit for the college teaching profession young men and women who possess the highest qualities of intellect, character, and personality. Acceptance of a Woodrow Wilson Fellowship entails no obligation to enter the academic profession and yet, 79 percent of all fellows appointed since the initiation of the program by Princeton University in 1945 have remained in graduate study or teaching.[4]

For the academic year 1957–58 the Association of Graduate Schools plans to award approximately 200 fellowships and possibly a larger number in subsequent years. In view of the great need for well-qualified college teachers, the association is exploring the possibility of further expanding the program.

[3] The program is underwritten jointly by the 37 universities comprising the Association of American Universities and is supported by grants from the Carnegie Corporation and the General Education Board.

[4] See *Directory of Fellowship Awards: 1945/46–1955/56*, issued by the National Woodrow Wilson Fellowship Program (Richard C. Boys, national director; Horace A. Rackham School of Graduate Studies, University of Michigan, Ann Arbor, Mich.).

Also reported were scholarship and fellowship programs of the *Methodist* and *Presbyterian churches* designed to make it possible for persons aiming at a career in college teaching to obtain their Ph.D. degrees, and the *American Speech and Hearing Association's* Speech Correction Fund, which provides scholarships in speech pathology and audiology on the doctoral level.

The *Teachers Insurance and Annuity Association* is working constantly on improving and extending staff benefits for members of the teaching profession, and believes that "in the area of staff benefit plans the colleges and universities are in a favorable position to cope with the expected increase in enrollments and with the job of attracting first-class teachers and administrators." The TIAA has also undertaken research studies on topics of such timely interest as *Financing the College Education of Faculty Children*[5] and "A Program for Outstanding Teachers after Retirement."

In addition to the above promotional activity, replies to the questionnaire indicate a substantial interest in research on the subject of motivation. The Committee on the Profession of College Teaching of the *Association for Higher Education of the National Education Association* is developing plans for a series of studies of motivation, in the belief that if the reasons for individuals entering and leaving college teaching were better understood, attempts at motivating entrance into the profession would be more effective. The *Southern Regional Education Board* is considering publication of a bibliography of studies of faculty personnel and may initiate a series of studies of ways of increasing the supply of qualified persons going into college teaching.

[5] The report of a study conducted by TIAA for the Fund for the Advancement of Education, and written by Francis P. King (New York: Henry Holt & Co., 1954).

With respect to recruitment in a particular discipline, the *American Psychological Association* has addressed itself to the question of how to bring about recruitment and preparation for graduate training in an educational program not directly oriented toward that end.[6]

Another research project which has a bearing on the subject of recruitment is the study of the Commission on Teacher Education of the *Association of American Colleges* on the baccalaureate origins of college teachers.[7]

Another contribution that some ACE member organizations are making with respect to the recruitment problem is in working with institutions on long-range planning of staff needs. A year ago the *American Association of Colleges for Teacher Education* initiated a questionnaire survey of its members to ascertain what they were doing to plan their staff needs on a long-term basis. Among the questions asked were: Has your institution undertaken any studies to predict the long-range demand for staff replacements or additions? Has it planned any specific activities to meet increased enrollments in ways other than by increasing the size of the faculty? Has it determined the standards to which it will hold under the pressure of increasing enrollments, in regard to class size, teaching load, faculty qualifications, etc.? The questionnaire also lists a number of means of meeting the problem of increased enrollments and asks to what extent each proposal might alleviate a shortage of teaching personnel without reducing the quality of instruction.

A preliminary report based on responses from 45 percent of AACTE member institutions indicates the extent of preparation among reporting institutions for increased enrollments and describes briefly some of the activities being planned to provide for these long-range staff needs.[8] This survey will provide the basis for further AACTE study and action with reference to this problem.

In connection with its survey, the AACTE is planning a series of case studies dealing with the nature and assessment of staff needs, with the objective of developing "a case study technique which could be made available to institutions interested in studying their own staffing problems."

Another survey of staff needs is that which the Council on Dental Education of the *American Dental Association* prepared for the *American Association of Dental Schools*. This survey of dental school teaching personnel sought such information as the average number of teaching hours and faculty members per school, the division of faculty time between classroom teaching, clinical teaching, laboratory work, research, administration, and so on. The Council on Dental Education believes that this information might be a valuable guide to individual dental schools in determining future needs for teachers in the event of increasing enrollments.

At its 1956 annual meeting, the *National Catholic Education Association* devoted part of its discussions to "Planning for Future Faculty Needs."[9]

Several professional societies are engaged in study of long-range supply and demand for college teachers in their respective disciplines. The *American Council of Learned Societies*, on the basis of its 1952 National Registration of

[6] "Issues in Undergraduate Education in Psychology," A Report to the Education and Training Board (Mimeographed; Washington: American Psychological Association, 1954); see Part C.

[7] Report of study under the direction of Frank R. Kille to be published in 1957.

[8] Published in *Bulletin* of the AACTE, VIII, #15, Jan. 12, 1956 (Oneonta, N.Y.).

[9] Proceedings of meeting published in NCEA *Bulletin* August 1956. "Planning for Future Faculty Needs," by William H. Conley, pp. 131–34.

the Humanities and the Social Sciences, has prepared studies of present college staff and staffing prospects in the fields of history, foreign languages, and art.[10] The objective of these studies is to call attention to the increasing demand for college teachers and to encourage ACLS constituent societies and others to plan to meet this problem.

From data collected by the Commission on Human Resources and Advanced Training, Dr. Dael Wolfle of the *American Association for the Advancement of Science* has prepared for the Education and Training Board of the *American Psychological Association* a report on Supply and Demand Trends for Ph.D.'s in Psychology.

In the area of the physical and biological sciences, the *American Chemical Society* has reported its participation (through its representative on the Scientific Manpower Commission, which in turn is cooperating with the Engineering Manpower Commission, the National Science Foundation, and the National Research Council) in the planning of a national conference dealing with the staffing of college and university departments of science and engineering. The conference is planned for the spring of 1957.

Retention of existing faculty

There is wide recognition of the necessity for improved salary scales if many gifted teachers are to be helped to resist the temptation of more lucrative opportunities outside of academic life. On the other hand, there is also recognition that educational institutions cannot be expected to match salaries offered by industry and that much needs to be done in other than financial ways to make the college teaching profession more attractive.

The retirement and other staff benefit programs of the *Teachers Insurance and Annuity Association*, mentioned above, obviously help make the college teaching profession more appealing not only to those considering entering the profession but also to those already in it. The *Association of College and University Housing Officers* is evaluating and encouraging research in the field of college housing, which could contribute to better housing accommodations for teachers.

Another method used by national associations to contribute to the financial status of college teachers is the conducting of salary surveys in order to focus public attention upon existing levels and upon the imperative need for larger investment in higher education. The *National Education Association* has published the results of its survey: "Salaries Paid and Salary Practices in Universities, Colleges, and Junior Colleges, 1955–56."[11] The *American Association of Junior Colleges* also conducts periodic salary surveys to show progress made and to encourage junior colleges to continue to improve salaries and staff benefits.

Beginning in the spring of 1957 the *Council for Financial Aid to Education* will sponsor an advertising campaign, with the assistance of the Advertising Council, on a two-year basis, to help make the American people more aware of their stake in higher education. The Advertising Council is developing advertising materials which highlight the importance of higher education. The materials will be offered to national and

[10] J. F. Wellemeyer, Jr., "Survey of United States Historians, 1952, and a Forecast," *American Historical Review*, January 1956.

———, "Future Needs for FL Teachers in Colleges and Universities," *Modern Language Journal*, November 1955, pp. 333–34.

William Ainsworth Parker, "Statistics on College Art Teachers," *College Art Journal*, Spring 1955.

[11] National Education Association, *Research Bulletin*, Vol. XXXIV, October 1956.

local advertisers for presentation to the public. The Council for Financial Aid to Education hopes that this campaign will create a climate favorable to the fund-raising efforts of all institutions of higher learning. Thus, indirectly, the campaign could lead to improved salaries for college teachers and to greater public respect for the profession in general.

The *American Association of University Professors* devotes a great deal of attention to the integrity of the teaching profession. Its Committee on Academic Freedom and Tenure develops basic policies and makes inquiries into particular instances of alleged infringement of academic freedom and tenure. The Subcommittee on Development of the AAUP Committee on Faculty-Administration Relationships attempts to stimulate progress within institutions of higher learning towards greater collaboration of faculties in determining academic policies.

Making the most of a scarce resource

Concern for preserving and increasing teaching quality by more efficient use of existing resources is evidenced by activities and plans of member organizations. Of the various methods of attack on this problem which are being explored, most frequently reported in this survey is that of providing various kinds of teaching aids so as to enable the teacher to reach larger numbers of students without appreciably increasing his work load. One of these is the device of using nonprofessional assistants. As reported above, the *American Association of University Women* is planning an inquiry of educational institutions as to their willingness to take on qualified apprentices.

The *American Association of Junior Colleges*, in cooperation with the Chicago Board of Educatiton and the Fund for the Advancement of Education, is participating in an experimental program whereby regular Chicago City Junior College courses are offered over an educational television station. The objective of the experiment is to discover how the abilities of outstanding teachers can be extended to large numbers of students.

The Department of Educational Services of the *Motion Picture Association of America* has a program of recruiting audio-visual specialists to participate in Negro land-grant college faculty workshops on the development and improvement of audio-visual programs. The *National Association of Educational Broadcasters* regularly sponsors workshops and seminars which emphasize the use of television in college instruction. The NAEB also provides consultants in this area.

Another general method for extending scarce teacher resources is simplifying and reducing the diversity of college curriculums. The *American Society for Engineering Education* has recently completed a survey, the objective of which was to make available the experience of engineering schools during the past decade in developing workable programs of study in the humanities and social sciences and to make recommendations for further strengthening this portion of engineering education. A report of this study has been published under the title *General Education in Engineering*.[12]

One of the findings of the study is that some of the leading engineering schools in the United States have developed programs providing "a sound introduction to the humanities and social sciences while simultaneously reinforcing the student's training." Consequently the report finds unwarranted the fears of some engineering educators that the introduction of a substantial program of humanistic-social studies into already crowded cur-

[12] A Report of the Humanistic-Social Research Project, 1956. Obtainable from Professor W. Leighton Collins, secretary, American Society for Engineering Education, University of Illinois, Urbana, Ill.

riculums might jeopardize the quality of technical education. The report considers the practical problems which confront those who must plan and carry out such programs for engineering students.

The Committee on Curriculum of the *American Association of Colleges of Pharmacy* has recommended to the Executive Committee of the association that it consider the feasibility of a pilot study of instruction in the professional courses of the standard program for the purpose of testing the necessity for certain course prerequisites and for prevailing minimum credit requirements in certain subjects. The committee's objective is to devise a minimum three-year professional program that will prepare the graduate for adequate performance in any field of pharmaceutical practice. Its premise is that a three-year professional curriculum falls short of the ideal but that a longer period of professional training would be an unrealistic requirement.

The *National League for Nursing* has been carrying on a comprehensive eight-year program of school of nursing improvement, giving special attention to faculty preparation, curriculum development, and teaching methods. One of the objectives of the program is to help teachers use methods which will permit increased enrollment without lowering standards of instruction.

On the interinstitutional level, the *National Catholic Educational Association* is considering means of eliminating duplication of educational programs in neighboring Catholic institutions of higher learning, thereby lightening faculty load and at the same time strengthening and broadening the course offerings open to the students of the institutions involved.

Another method of attack on the problem of extending scarce teacher resources is to make students more largely responsible for their own education and less dependent upon faculty members for guidance. The *United States National Student Association* has established a subcommission on course evaluation, one of the aims of which is to create in the student an awareness of his own responsibility in the educational process.

Other projects in the general area of better utilization of college teacher resources are the above-mentioned survey of the *American Association of Colleges for Teacher Education*, the *Western College Association's* November 1956 meeting, devoted to the theme "Effective Utilization of Faculty Resources in a Time of Increasing Enrollments,"[13] and the summarizing by the Committee for the Advancement of School Administration of the *American Association of School Administrators* of recent developments in internships, course structure, off-campus classes, and the like.

Preparing college teachers and helping teachers on the job

A fourth area in which respondents indicate activity has to do with preparing college teachers and providing means for their continuing development.

A number of constituent and associate members of the American Council on Education are actively supporting training programs designed to further the professional growth of college teachers. Among these programs are various summer institutes. The *Association of American Medical Colleges* has held three recent annual teaching institutes in the basic sciences.[14] The *American Chemical Society* also holds summer institutes for college teachers each year. The 1956 institute reviewed the impact of recent research developments on the teaching

[13] Proceedings to be published early in 1957.

[14] See *The Journal of Medical Education*, Vol. XXIX, July 1954, Part 2 (Report of First Teaching Institute on the Teaching of Physiology, Biochemistry, Pharmacology) and Vol. XXX, September 1955, Part 2, (Report of Second Teaching Institute on the Teaching of Pathology, Microbiology, Immunology, Genetics).

of chemistry and discussed new methods of instruction.

In collaboration with the United States Atomic Energy Commission and the National Science Foundation, the *American Society for Engineering Education* initiated in 1956 a summer nuclear institute at Atomic Energy Commission laboratories for the purpose of giving engineering teachers an introduction to the concepts of nuclear technology. The society is exploring the possibility of extending this program to provide advanced training in nuclear technology.

An important in-service training activity in the social sciences is the program of Congressional Fellowships of the *American Political Science Association*. These fellowships annually enable five young political science teachers to spend nine months in Washington as interns on the staffs of individual congressmen and congressional committees. Another internship program is that of the *Asia Foundation*, which sponsors a group of young American graduate students in the field of Asian studies for a period of teaching the English language in certain Asian countries. One of the objectives of this program is to develop better teachers of Asian studies in the United States.

Another kind of in-service experience is provided by the visiting lecturer programs of the *American Chemical Society* and the *Mathematical Association of America*, which are supported financially by the National Science Foundation. Under these programs prominent scientists are brought to the campuses of smaller institutions for a three-day period, during which they may give lectures, conduct seminars, and consult with faculty and students both individually and in groups. These programs are designed to provide faculty and students in small colleges with the opportunity of contacts with creative scientists as well as to aid in the motivation of able students for careers in chemistry and mathematics and the teaching of these subjects.

Also reported in the area of in-service training are the regional conferences on teacher preparation and teaching methods sponsored by the *National League for Nursing*, a projected yearbook of the *National Society for the Study of Education* on the topic "In-Service Education for Teachers, Supervisors, and Administrators," and the *American Social Hygiene Association's* teacher preparation projects to promote more effective family life education in the colleges and universities.

A project more concerned with the in-service development of high school than of college teachers, but nevertheless relevant to this inquiry, is the *American Association for the Advancement of Science's* "Study on the Use of Science Counselors."[18] In this study two qualified teachers of college science and mathematics, operating out of each of four centers established at state universities, serve as supervisors and counselors for some 100 secondary school science and mathematics teachers in each area. While the principal objective of this experiment is to develop better secondary school science and mathematics programs, AAAS officers suggest that college science instruction is also likely to benefit as the counselors and their university colleagues become better acquainted with the goals, activities, and problems of secondary school teachers.

Several professional societies emphasized the work they are doing relating to standards of college instruction in their respective disciplines. One approach is through giving special attention to basic courses in the field concerned. The *Mathematical Association of America* has prepared source books of text

[18] This study is a major activity of the Science Teaching Improvement Program of the AAAS, supported by a grant from the Carnegie Corporation.

materials[16] for freshman mathematics, with the objective of redesigning the collegiate mathematics curriculum in order to bring it into accord with present-day needs both of science majors and of liberal arts students generally. The *American Association of Physics Teachers* held a conference on introductory physics courses in September 1956.[17] The *National Council of Teachers of English* is planning to produce volumes on the teaching of college English, and the *Modern Language Association* has under review a proposal for the preparation of a college textbook in beginning Spanish.

Another approach is the development of proposed preparation requirements for college teachers, to be administered by preparing departments. The *National Federation of Modern Language Teachers Associations* has conducted a survey of the academic and professional training of modern language teachers. Among the types of information requested were special "certification" requirements, requirement of graduate teaching, and credit hours required for majors. The *Modern Language Association* in 1955 held a conference which involved eighteen department chairmen from seventeen universities which in the past five years had awarded a total of more than 400 Ph.D. degrees in Germanic and Romance languages, on the preparation of college foreign language teachers. With one dissenter, agreement was reached in the conference that there is a demonstrated need for specific preparation for teaching foreign languages. One of the elements in such preparation for "certification" by a preparing department would be the completion of courses (or offering of equivalencies) in advanced conversation and composition, phonetics, and teaching methods. Another ultimate requirement, it was proposed, might be passing a nationally standardized examination given under the auspices of the Modern Language Association.[18] The Committee on the Relation of Learned Societies to American Education of the *American Council of Learned Societies* has under consideration a proposal that statements of minimum competencies of teachers in various liberal arts fields be prepared, similarly to those done in the foreign language field.

Suggestions for the American Council on Education

While a variety of suggestions were made as to how the Council might contribute to the solution of problems relating to college teaching, two suggestions were made repeatedly. One was that the Council serve as a clearinghouse of information on the various programs under way and help coordinate the efforts of all concerned. One response suggested that such a clearinghouse function, particularly in respect to orientation and in-service training programs in professional schools, is an urgent need.

The other dominant suggestion was that the Council compile and present facts on the nature of the profession of college teaching and publicize among prospective candidates the needs and opportunities in this field.

Other suggestions had to do with what might be called the "placement problem." Two responses suggested potential sources of qualified teachers which have not been fully exploited: first, persons retiring from government, business, or other professions; second, Americans who have returned from graduate studies

[16] "Universal Mathematics," Parts I and II, obtainable by request to Professor G. Baley Price, Department of Mathematics, University of Kansas, Lawrence, Kansas.

[17] A report on this conference is to be published soon in the *American Journal of Physics*.

[18] See *FL Bulletin* No. 38, May 1955, Modern Language Association.

abroad and advanced foreign students in the United States.

Another suggestion was that the Council encourage foundations to invest large sums in graduate fellowships for those preparing for a teaching career.

Several suggestions were made in regard to programs for the preparation of teachers. One organization proposed that a broadly based survey to determine existing and anticipated institutional policies with respect to employment, promotion, and tenure of college teachers without doctorates would provide needed guidelines for graduate schools. The proposal reflects a widely held assumption that the percentage of college teachers having the doctorate will decline as the demand for teachers increases.

Still another suggestion was that the Council encourage the extension of existing programs of visiting lecturers in science and mathematics to other fields as well.

THERE IS quite enough evidence to warrant the statement that the attrition rate for graduate students is inordinately high, much higher than in any medical or law school of good standing at the present time. . . . I do not know what the relationship is between the length of time required to fulfill the Ph.D. requirements and this very high withdrawal rate, but I believe it to be a fairly close one, though I recognize the existence of other factors such as insufficient attention to qualifications in the selection and admission of students to the graduate schools.

Everyone recognizes that we shall need far more college teachers in the years ahead. If we can reduce the attrition rate, we should be able to add to the supply of college teachers, perhaps materially so. To be sure, a majority of those teaching in colleges at the present time do not have the Ph.D. degree. What proportion of them began study for the Ph.D. and then dropped out or were failed out, we do not know. But since we shall very certainly need many more teachers in the colleges, and since it is to be hoped that they will be well trained and fully qualified, we should do what we can to provide courses of graduate study which will give them that training and in as large numbers as our graduate schools can properly accommodate. We hear a good deal about the expansion of graduate schools, though those advocating such expansion frequently do not tell us how the larger graduate school faculties are to be secured, nor do many of them indicate the possibility of making additional space in the graduate schools by the simple procedure of keeping some of the graduate students for a shorter period of time.—From "The Ph.D. Stretch-Out and the Scholar-Teacher" by Benjamin F. Wright, in *Vital Issues in Education*, published by American Council on Education, spring 1957.

Financial Statements of the American Council on Education

F. W. LAFRENTZ & CO.

CERTIFIED PUBLIC ACCOUNTANTS

EXECUTIVE OFFICES, NEW YORK CITY

Tower Building
Washington 5, D. C.

March 6, 1957

AMERICAN COUNCIL ON EDUCATION
1785 Massachusetts Avenue, N. W.
Washington, D. C.

GENTLEMEN:

We have examined the recorded cash transactions of the American Council on Education for the year ended December 31, 1956. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances, except that we did not confirm by direct correspondence the membership dues received during the period under review.

In our opinion, subject to the above limitation in the scope of our examination in regard to membership dues, the accompanying statements of cash receipts and disbursements present fairly the recorded cash transactions of the American Council on Education for the year ended December 31, 1956, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding period.

F. W. LAFRENTZ & CO.
Certified Public Accountants

OPERATIONS

A summary of the operations of the General Fund for the year ended December 31, 1956, is as follows:

Receipts:	
Members' dues	$ 180,032.50
Reimbursement for services	93,345.66
Interest on investments (net)	20,135.72
Total receipts	$ 293,513.88
Disbursements:	
Administrative expenses	$ 207,499.49
Committees and commissions	24,875.79
Special conferences	10,045.11
Educational Record and Bulletin, *Higher Education and National Affairs*	39,226.53
Purchase of furniture and equipment (net)	2,050.83
Transfer to Accrued Leave Reserve Fund	2,000.00
Transfer to Depreciation Reserve Fund	800.00
Total disbursements	$ 286,497.75
Excess of receipts over disbursements—transferred to Reserve Fund	$ 7,016.13

An analysis of the changes in the Reserve Fund during the year ended December 31, 1956, is as follows:

Receipts:		
Excess of receipts over disbursements transferred to General Fund		$ 7,016.13
Interest on investments		4,142.50
Interest on loan to Building Fund		4,860.45
Transfers from Special Funds (net):		
Commission on Accreditation		2,494.74
Committee on Leaders and Specialists		6,023.04
Total receipts		$ 24,536.86
Disbursements:		
Interest on investments transferred to General Fund	$ 4,142.50	
Building alterations and improvements	8,993.32	
Total disbursements		$ 13,135.82
Excess of disbursements over receipts		$ 11,401.04

Operations of the American Council on Education building resulted in net income of $24,427.89, before loan curtailment, interest payments, and capital expenditures. A summary of the cash receipts and disbursements of the Building Fund for the year ended December 31, 1956, is as follows:

Receipts:	
Net income from operation of building	$ 24,427.89
Disbursements:	
Alterations and improvements	$ 19,127.08
Loan curtailment and interest payments	12,210.45
Purchase of furniture, fixtures and equipment (net)	14.02
Total disbursements	$ 31,351.55
Excess of disbursements over receipts	$ 6,923.66

The Building Fund was indebted to the Reserve Fund at December 31, 1956, for loans of $133,620.00 and to the Publications Fund for $10,000.00. These loans are to be repaid with interest at the rate of 3¼% per annum.

A summary of the operations of the Publications Fund for the year ended December 31, 1956, is as follows:

Receipts:	
Sales of publications—less refunds	$ 232,328.03
Interest on investments and loans	1,270.68
Advances and reimbursements for publication of books	26,227.06
Total receipts	$ 259,825.77

Disbursements:	
Operating expenses	$ 194,236.71
Administrative services	13,390.06
Transfers to Special Funds	11,000.00
Transfer to Depreciation Reserve Fund	100.00
Total disbursements	$ 218,726.77
Excess of receipts over disbursements	$ 41,099.00

A summary of the Publications Fund, as prepared by the Manager of Publications, showing assets other than cash and investments at December 31, 1956, is as follows:

Accounts receivable	$ 26,287.84
Inventories:	
American Council on Education publications	51,939.12
Cooperative Study of Secondary School Standards publications	16,686.15
Loan to Building Fund	10,000.00
Total	$ 104,913.11

In addition to the above, at December 31, 1956, the Publications Fund had $99,192.39 invested in U.S. Government obligations with a maturity value of $100,000.00.

The cash and investments of the Publications Fund are restricted to the extent of $83,606.15 for special purposes, such as future publications and payment of royalties.

A summary of the operations of Central Services for the year ended December 31, 1956, is as follows:

Receipts:	
Reimbursement for services	$ 62,263.23
Reimbursement for postage	26,023.70
Total receipts	$ 88,286.93
Disbursements:	
Cost of services	$ 45,271.11
Postage	29,535.76
Administrative services	4,553.17
Equipment	544.14
Transfer to Depreciation Reserve Fund	300.00
Total disbursements	$ 80,204.18
Excess of receipts over disbursements	$ 8,082.75

GENERAL

Cash and Investments

Reserve Fund:		
Cash in bank	$ 76,748.31	
Investments—at cost	161,099.33	$ 237,847.64
Depreciation Reserve Fund:		
Cash in bank		3,600.00

Publications Fund:		
Cash in bank	$ 22,966.18	
Investments—at cost	99,192.39	122,158.57
Central Services Fund:		
Cash in bank		13,964.75
Accrued Leave Reserve Fund:		
Cash in bank		4,000.00
Special Funds:		
Cash in bank	$ 58,013.64	
Investments—at cost:		
U. S. Treasury Bills:		
Due Jan. 24, 1957, maturity value $150,000.00	148,897.50	
Due Jan. 31, 1957, maturity value $50,000.00	49,635.00	
Due Feb. 21, 1957, maturity value $100,000.00	99,239.00	
Due Feb. 28, 1957, maturity value $100,000.00	99,198.00	
Due Mar. 7, 1957, maturity value $100,000.00	99,216.00	
Due Mar. 28, 1957, maturity value $375,000.00	372,031.97	926,231.11
Total		$1,307,802.07
Add: in-transit items (net)		1,033.99
Total cash and investments		$1,308,836.06

The cash on deposit with the American Security and Trust Company was confirmed by correspondence with the depositary. Receipts from all funds are deposited intact into this account, and the cash balances shown above were reconciled with the amount reported directly to us by the bank as of December 31, 1956. The investments were confirmed by direct correspondence with the American Security and Trust Company, where they are held for safekeeping and investment. The in-transit items represent expenditures made out of the General Fund which are to be reimbursed by various Council personnel and outside organizations in subsequent periods, as well as receipts which are being held to the credit of various personnel and organizations. These items have not been shown as receipts or disbursements in the statement of General Fund operations.

Insurance

Insurance policies indicating the following coverage at December 31, 1956, were examined by us or confirmed by correspondence with the Insurance Department of the American Security and Trust Company:

Fire and extended coverage:	
Building	$750,000.00
Rental value	90,000.00
Contents:	
American Council on Education Building	85,000.00
Banta Publishing Company, Menasha, Wisconsin	45,000.00
Veterans' Testing Service, Chicago, Illinois	7,000.00
Washington International Center	15,000.00
Commission on the Education of Women, Columbia University, New York	2,000.00
Boiler, machinery and elevators	50,000.00
General liability:	
Bodily injury:	
Each accident	100,000.00
Maximum coverage	300,000.00
Property damage	5,000.00

Blanket fidelity bond	15,000.00
Water damage	5,000.00
Burglary and robbery:	
Washington International Center	5,000.00
Commission on the Education of Women, Columbia University, New York	1,000.00
Workmen's compensation	Statutory

Special Funds

Contributions and grants received by the Special Funds were confirmed by correspondence with the donors with the exception of government contracts and minor amounts. The contracts with government departments, however, were submitted to us for inspection. A statement of cash receipts and disbursements of Special Funds is presented in Exhibit A, following.

EXHIBIT A

AMERICAN COUNCIL ON EDUCATION
WASHINGTON, D. C.

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS—SPECIAL FUNDS
From January 1 to December 31, 1956

Fund	*Cash Balance Jan. 1, 1956*	*Receipts*	*Disbursements*	*Cash Balance Dec. 31, 1956*
American-Sponsored Schools in Cuba and Mexico	——	$ 31,135.81	$ 25,820.22	$ 5,315.59
Asia Foundation grant—Indian Centenary	——	6,700.00	5,300.00	1,400.00
Canada–United States Committee on Education:				
Carnegie Corporation of New York grant	$ 1,069.90	——	246.83	823.07
Fund for the Advancement of Education grant, Common Values of Citizenship	2,123.77	——	2,123.77	——
Conference funds	260.97*	260.97	——	——
Commission on Accreditation of Service Experiences:				
Carnegie Corporation of New York grant	2,785.54	——	2,785.54	——
U.S. Armed Forces Institute Contract, DA-47-043-IE-557	12,693.10*	38,513.32	25,820.22	——
Overhead account	——	2,338.85	2,338.85	——
U.S. Armed Forces Institute Contract, DA-47-043-IE-617	——	13,702.51	25,344.02	11,641.51*
Accumulated leave	1,983.74	1,066.67	404.22	2,646.19
Commission on the Education of Women:				
Budget, 1955-56—transfer from American Council on Education	4,933.74	——	417.56	4,516.18
Carnegie Corporation of New York grant	——	9,900.00	——	9,900.00
Commission on Student Personnel Work	2,118.19	556.17	903.07	1,771.29
Committee on College Teaching—transfer from American Council on Education	3,315.59	——	2,933.64	381.95
Committee on Equality of Opportunity in Higher Education	292.82	848.82	60.20	1,081.44
Committee on Leaders and Specialists:				
U.S. Department of State Contract SCC 22584	339.10	——	339.10	——
U.S. Department of State Contract SCC 23124	204,364.17	17,500.00	220,822.28	1,041.89
U.S. Department of State Contract SCC 23574	111,596.34	274,845.00	207,142.53	179,298.81
U.S. Department of State Contract SCC 24163	——	100,000.00	28,860.44	71,139.56
Committee on Religion—Preliminary Study	459.47	1,259.43	212.44	1,506.46
Committee on Television:				
Budget, October 1, 1954, to May 31, 1956—Fund for Adult Education	13,200.57	——	13,200.57	——
Budget, September 1, 1956, to August 31, 1957—Ford Foundation	——	12,000.00	2,703.71	9,296.29
Conference fund—Ford Foundation	——	1,000.00	699.47	300.53
Conference on the College Teaching Crisis—Fund for the Advancement of Education	6,767.87	——	6,767.87	——
Conference on Religion and Public Education—Danforth Foundation	——	5,000.00	92.60	4,907.40
Council on Cooperation in Teacher Education:				
Budget, July 1, 1955, to June 30, 1956	3,146.67	635.00	3,781.67	——
Budget, July 1, 1956, to December 31, 1956	——	3,511.61	3,467.93	43.68
Conference on Preparation of Secondary School Teachers	——	5,883.00	4,308.32	1,574.68
Dental Survey	142.46*	155,000.00	184.49	154,673.05
Evaluation of the Tyler Fact-Finding Study—U.S. Department of Defense Contract DA-49-039-IE-39	4,412.32*	5,366.85	954.53	——
Exploratory Conference on Research and Study in the Field of Highway Finance	1,951.42	——	——	1,951.42
Foreign Language Study Fund	899.37	146.02	——	1,045.39
Handbook on Measurement and Evaluation, Preparation of	4,000.00	——	——	4,000.00

EXHIBIT A—*Continued*

Fund	*Cash Balance Jan. 1, 1956*	*Receipts*	*Disbursements*	*Cash Balance Dec. 31, 1956*
Institutional Projects Abroad—Ford Foundation:				
Budget, 1955–56	$27,111.70	—	$27,111.70	—
Budget, 1956–57	—	$38,313.72	8,415.05	$29,898.67
Inter-American Schools Service:				
State Department Contract, SCC 23545, $175,000.00	146,619.89	—	146,619.89	—
State Department Contract, SCC 24161, $250,000.00	—	250,000.00	39,223.75	210,776.25
Annual conference funds	—	4,050.00	—	4,050.00
Accumulated leave	1,451.34	2,048.29	2,120.84	1,378.79
Japanese Universities Counseling Project—Rockefeller Foundation	9,378.29	—	6,493.49	2,884.80
Joint Council on Educational Television:				
Budget, April 1, 1955, to December 31, 1955—Fund for Adult Education	19,719.07	—	19,719.07	—
Budget, January 1, 1956, to December 31, 1956—Ford Foundation	—	140,000.00	124,407.27	15,592.73
Old Dominion Foundation grant, $1,000.00	330.06	44.00	—	374.06
Old Dominion Foundation grant, $11,501.00	1,279.98	—	1,256.32	23.66
Old Dominion Foundation grant, $14,310.00	—	14,310.00	12,545.64	1,764.36
Accumulated leave	—	12,859.65	1,425.70	11,433.95
Manual on University and College Business Organization and Administration	918.32	—	.07	918.25
National Citizens Committee for Educational Television:				
Budget, January 1 to December 31, 1955	15,691.43	27,662.39	43,353.82	—
Terminal contingency fund	27,662.39	—	27,662.39	—
Old Dominion Foundation grant	1,000.00	—	1,000.00	—
Orientation Program for Foreign Grantees under the Educational Exchange Program (Washington International Center):				
State Department Contract, SCC 23499, $154,000.00	92,445.53	3,500.00	95,945.53	—
State Department Contract, SCC 24149, $160,900.00	—	160,900.00	70,203.88	90,696.12
Accumulated leave	4,154.70	2,406.70	1,327.05	5,234.35
Preparation and publication of booklet, "Student Participation in Higher Education"	—	2,000.00	958.20	1,041.80
Revision Program, Cooperative Study of Secondary School Standards	2,388.40	10,328.00	11,868.94	847.46
Scholarship Project—Carnegie Corporation of New York grant	7,039.27	—	7,039.27	—
Statistical Information and Research—Carnegie Corporation of New York grant	—	75,000.00	6,832.57	68,167.43
Study of Influences on Character and Personality Development	278.99	5,000.00	1,224.87	4,054.12
Study of the Soviet Union in Social Studies	665.20	—	—	665.20
Survey of College Housing—Carnegie Corporation of New York grant	—	10,000.00	6,902.96	3,097.04
Teacher Characteristics Study—Grant Foundation	7,490.21	—	1,278.76	6,211.45
Thurstone Primary Abilities Research Fund	983.13	—	—	983.13
Veterans' Testing Service	33,897.09	24,011.84	38,744.80	19,164.13
Zook, George F., Memorial Fund	450.00	14.65	464.65	—
Total Special Funds	$748,794.41	$1,469,619.27	$1,292,182.57	$926,231.11†

* Overdraft.

† As of December 31, 1956, $868,217.47 of the total cash balances to the credit of the individual special funds was invested in short term U.S. Government obligations, due March 27, 1957, or earlier.